OM protein - protein search, using sw model Run on: May 20, 2005, 00:24:35 ; Search time 162 Seconds (without alignments)
229.191 Million cell updates/sec

Sequence: Perfect score: US-10-632-414-3 514 1 ATTSTGNSARFVNQHLCGSH.....IVEQCCTSICSLYQLENYCG

96

Scoring table: Gapop 10.0 , Gapext 0.5 BLOSUM62

Searched: 2105692 segs, 386760381 residues

Total number of hits satisfying chosen parameters:

Minimum Maximum DB DB seq length: 0
seq length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

A\_Geneseq\_16Dec04:\*
1: geneseqp1980s:\*
2: geneseqp1990s:\*
3: geneseqp2000s:\*
4: geneseqp2001s:\* geneseqp2000s:\*
geneseqp2001s:\*
geneseqp2002s:\*
geneseqp2003as:\*
geneseqp2003bs:\*
geneseqp2001bs:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	80	7	0	v	4.	u	2	<b>1</b>	, No	Result
454	454	454	454	454	455	455	455	458	492	492	496	496.5	497	497.5	498	498	498	498	501	504	504	504	508	514	Score	
88.3	8	88.3	8	8	æ		88.5	89.1	95.7	95.7	96.5	96.6	96.7	96.8	96.9	96.9	96.9	96.9	97.5	98.1	98.1		98.8	100.0	Match	Query
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Adf77582 Human ins		_		Aap10042 Sequence	~1	Aap90102 Synthetic	Aar20467 Yeast alp	Aay53589 Human pre	Aaw93415 Human ins	Aaw93419 Human ins	Aaw93416 Human ins	4 Human	Aay51223 Human pre	Aay51222 Human pre	Human		Human	Aay08004 Human pro	Aar15472 NcoI-SalI	Aar78661 Proinsuli	Aao17831 Human pro	Aay08005 Human pro	Adn34534 Preproins	eproi	Description	

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### ALIGNMENTS

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12-FEB-2004.		DE10235168-A1.		Homo sapiens.		genetically modified microorganism.	<pre>preproinsulin; insulin; diabetes mellitus; fermentation;</pre>		Preproinsulin peptide fragment #3.		17-JUN-2004 (first entry)		ADN34535;		ADN34535 standard; peptide; 96 AA.	ADN34535	RESULT 1
						•	fermentation;					•					

01-AUG-2002; 2002DE-01035168.

(AVET ) AVENTIS PHARMA DEUT GMBH.

01-AUG-2002; 2002DE-01035168.

Thurow H, Blumenstock H, Havenith ü

WPI; 2004-228442/22.

Purification of preproinsulin, useful for conversion to insulin, comprises removing high molecular weight impurities by anion-exchange then cation-exchange chromatography.

Claim 3; SEQ ID NO 3; 19pp; German.

This invention describes a novel method for purification of preproinsulin which comprises removing high molecular weight substances from an aqueous solution by chromatography on an antion exchanger in flow-through mode and separation by chromatography on a cation exchanger in adsorption mode. A method is also described for preparation of insulin by expression of unfolded preproinsulin. The method is used as part of a process for preparing insulin (for treating diabetes mellitus) by fermentation of genetically modified microorganisms that express unfolded preproinsulin. The method provides efficient removal of contaminants (particularly polymeric preproinsulin) that adversely affect stability of insulin during subsequent processing steps

Sequence 96 AA;

Length 96;

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RESULT 2
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                                                                                                                                                                                                                                                                                                                                                                  This invention describes a novel method for purification of preproinsulin which comprises removing high molecular weight substances from an aqueous solution by chromatography on an anion exchanger in flow-through mode and separation by chromatography on a cation exchanger in adsorption mode. A method is also described for preparation of insulin by expression of unfolded preproinsulin. The method is used as part of a process for preparing insulin (for treating diabetes mellitus) by fermentation of genetically modified microorganisms that express unfolded preproinsulin. The method provides efficient removal of contaminants (particularly polymeric preproinsulin) that adversely affect stability of insulin during a process of the contaminants.
                                                                                                                                                                                                                                                                                                Sequence 96
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                                                                                                         ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA 60
                                                                                ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA
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Pred. No.
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RESULT 4
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AAYOBOO5
ID AAYO
XX AAYO
AC AAYO
DT 20-M
DT 08-J
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Matches 95
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
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08-JUL-1999
                                                                   Human; insulin; cysteine bridge;
                                                                                                                    Human
                                                                                                                                                                       13-SEP-2002
                                                                                                                                                                                                                        AAO17831;
                                                                                                                                                                                                                                                                    AAO17831 standard; peptide; 96 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example 1; Page 12; 16pp; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Preparation of insulin precursors with cystine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rubroeder FD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18-AUG-1997;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Insulin; human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human proinsulin protein fragment
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HMRI ) HOECHST MARION ROUSSEL
                                                                                                                    proinsulin #2
                                                                                                                                                                                                                                                                                                                                                                                                5
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                               GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTFKTRREAEDPQVGQVELGGGPGA 60
                                                                                                                                                                                                                                                                                                                                                                                                   GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 96 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and chaotropic auxiliary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           standard; peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98.1%;
llarity 99.0%;
Conservative
                                                                                                                                                                     (first
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(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Keller R;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    97DE-01035711
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                                                                                                                                                                     entry)
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Pred. No. 1.1e-47;
0; Mismatches 1
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5 deg. C
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Best Local
                                                                                                                                                                                                    Proinsulin; post-translational modification; recombinant production; protein folding; conformation.
                                                                                                                                                                                                                                                     03-APR-1996
                                                                                                                                                                                                                                                                        AAR78661
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The present invention relates to insulin or insulin derivative precursors in an aqueous suspension, which are diluted with cysteine or cysteine hydrochloride to pH 11.5 and then at 55plusoC a kaotropic additive is added. The present sequence is one version of human proinsulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Preparation of insulin precursors with cysteine and chaotropic auxiliary.
          23-AUG-1995
                             EP668292-A2
                                                                 Peptide
                                                                                             Pept ide
                                                                                                                           Peptide
                                                                                                                                                      Region
                                                                                                                                                                                  Synthetic
                                                                                                                                                                                                                                  Proinsulin sequence
                                                                                                                                                                                                                                                                                         AAR78661 standard; protein; 97 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Example
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-135401/12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rubroeder F,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (HMRI ) HOECHST MARION ROUSSEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18-AUG-1997;
11-AUG-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11-AUG-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2; Page 8; 20pp;
                                                                                                                                                                                                                                                                                                                                                      GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG
                                                                                                                                                                                                                                                                                                                                           GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG
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98EP-00115048.
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                                                                                                                                                               Location/Qualifiers
                                                                                   /label=
                                                                                                      /label= R1-(B2-B29)-Y
/note= "human insulin
                                                                                                                                              /label= R1
                                                                          note= "C-peptide"
                                                                                                     notes
                                                         'label=
                                                                                                                                   note= "a peptide of 11
                                                                                                                                                                                                                                                                                                                                                                                                                              98.1%;
99.0%;
                                              "human insulin A-chain"
                                                         Gly-R3
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Pred. No. 1.1e-47
0; Mismatches
                                                                                                       ingulin
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                                                                          ō,
                                                                          human insulin"
                                                                                                       B-chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cystine
                                                                                                                                    amino acids"
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RESULT 6
AAR15472
ID AAR1
XX AAR1
AC AAR1
AC AAR1
DT 09-J
DT 11-M
XX NCOI
XX Sign
KW Sign
KW GM-C
XX Synt
PN WO91
XX WO91
XX TI-M
PR 11-M
PR 30-N
XX YAAR
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The present sequence is an example of a proinsulin molecule corresp. to the general formula R2-R1-(B2-B29)-Y-X-Gly-(A2-A20)-R3 (II). In formula (II), X = Lys, Arg or a peptide of 2-35 amino acids contg. Lys or Arg at the N- and C-termini; Y = a natural amino acid; R1 = phe or a bond; R2 = H, Arg, Lys, a peptide of 2-45 amino acids contg. Arg or Lys at the N- and C-termini; R3 = a natural amino acids (R2-R20) and (B2-B29) are the insulin A- and B-chain sequences from human or other insulin. The proinsulin molecule (produced in recombinant E.coli) is reacted with mercaptan at a ratio of 2-10 SH residues of mercaptan per Cys residue of proinsulin. The reaction takes place in the presence of a chaotropic auxiliary agent at pH 10-11 and results in proinsulin with correctly linked cystine bridges. Reaction with trypsin and opt. carboxypeptidase B yields correctly folded insulin. The insulin is isolated by absortion on
                            11-MAY-1990;
30-NOV-1990;
                                                                                                                                                                                 Brevibacillus
                                                                                                                                                                                                             Signal peptide; promoter; transcription control; protease; IFN; GM-CSF; Factor VIII; insulin; TNF; NGF; vector; foreign protein.
                                                                                                                                                                                                                                                                                       09-JAN-2003
11-MAR-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 97 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Isolation of insulin that is correctly post-translationally by reacting pro:insulin with a mercaptan in the presence of agent and purificn. after absorption to hydrophobic resin.
                                                                        11-MAY-1990;
                                                                                                        28-NOV-1991
                                                                                                                                    WO9118101-A.
                                                                                                                                                                                                                                                         NcoI-SalI fragment prod.
                                                                                                                                                                                                                                                                                                                                     AAR15472;
                                                                                                                                                                                                                                                                                                                                                                  AAR15472 standard; protein;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-FEB-1994;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Obermeier R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (FARH ) HOECHST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                              GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                       (revised)
(first entry)
                                                                                                                                                                                  brevis.
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                              90JP-00122166.
90JP-00334575.
                                                                          90JP-00122166
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99.0%;
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                                                                                                                                                                                                                                                         as foreign protein.
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Pred. No. 1.2e-47;
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a chaotropic
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(FARH ) HOECHST JAPAN LTD

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Best Local S
Matches 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA encoding the signal peptide associated with the BBRP42 gene of B. brevis may be incorporated into an expression vector, pref. with the promoter sequence and transcription control region. DNA encoding a foreign protein (e.g. Egr) may be ligated immediately downstream of the signal region. The vector may then be used to transform a host organism which then expresses the protein on culture. BBRP42 is secreted by B. brevis during an early stage of incubation, and so its associated signal peptide allows a foreign protein to be secreted during this early stage when protease prodn. is low, thus increasing reovery of the protein. Proteins for which the method may be used include interferon, interleukin, human epidermal growth factor, GM-CSF, Factor VIII, insulin, tumour necrosis factor and NGF. See also AAQ15229-31. (Updated on 09-JAN-2003 to add missing OS field.)
                                                                                                                                                                                                                                                                 Human proinsulin protein fragment 1.
            Preparation of insulin precursors with cystine bridges cysteine and chaotropic auxiliary.
                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                          Insulin;
                                                                                                                                                                                                                                                                                          20-MAR-2003
08-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         expression of interferon, improved yield.
                                                 WPI; 1999-135401/22.
                                                                                                                                             11-AUG-1998;
                                                                                                                                                                      07-APR-1999
                                                                                                                                                                                            EP906918-A2
                                                                                                                                                                                                                                                                                                                              AAY08004;
                                                                                                                                                                                                                                                                                                                                                    AAY08004 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hashimoto T,
                                                                                               (HMRI ) HOECHST MARION ROUSSEL
                                                                                                                       18-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Expression vector for
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(first en
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                                                                                                                       97DE-01035711
                                                                                                                                              98EP-00115048
                                                                         Keller
                                                                                                                                                                                                                                            A chain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9; 44pp;
                                                                                                                                                                                                                                                                                                                                                   peptide;
                                                                                                                                                                                                                                                                                          entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    signal peptide from Bacillus brevis - for con, insulin, epidermal growth factor etc.
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                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Japanese.
                                                                                                                                                                                                                                            chain;
                                                                                                                                                                                                                                                                                                                                                    96
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Pred. No. 2.
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                                                                                                                                                                                                                                         chain; pro-insulin; chaotropic agent.
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.5e-47;
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RESULT 8
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Matches 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This invention describes a method for the production of insulin or insulin derivative precursors in an aqueous suspension which are dilute with cysteine or cysteine hydrochloride to pH 11.5 deg. a chaotropic additive is added. This sequence represents human proinsulin which is used in the description of the invention. This patent an equivalent to HU9801886. (Updated on 20-MAR-2003 to correct DR field
                                                                                             Sequence
                                                                                                                     The present invention relates to insulin or insulin derivative precursors in an aqueous suspension, which are diluted with cysteine or cysteine hydrochloride to pH 11.5 and then at 55plusoC a kactropic additive is added. The present sequence is one version of human proinsulin
                                                                                                                                                                                                      Preparation of insulin precursors with cysteine and chaotropic auxiliary.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                 Example 1;
                                                                                                                                                                                                                                           WPI; 1999-135401/12.
                                                                                                                                                                                                                                                                   Rubroeder F,
                                                                                                                                                                                                                                                                                                                   18-AUG-1997;
11-AUG-1998;
                                                                                                                                                                                                                                                                                                                                                      11-AUG-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                             Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human; insulin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Human proinsulin #1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAO17830;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAO17830 standard; peptide; 96
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                                                                                                                                                                                                                                                                                            (HMRI ) HOECHST MARION ROUSSEL DEUT GMBH
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                                                           Similarity
                                                                                              96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA
             ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGGPGA
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 ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGA
                                                                                                                                                                                 Page 6; 20pp; German.
                                             96.9%;
nilarity 98.9%;
Conservative
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98EP-00115048.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                    cysteine bridge; kaotrophic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    entry!
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                                             Score 498; DB 2;
Pred. No. 5.2e-47;
0; Mismatches 1
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Pred. No. 5.2e-47;
0; Mismatches 1
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RESULT 10
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                                                                                                                                                                                        Matches
                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                            pro-insulin is produced by treating recombinant precursor protein with a mercaptan to provide 2-10 SH residues per Cys residue, in presence of a chaotropic agent and in aq. medium of pH 10-11, treating the prod. with:
-50 g hydrophobic adsorber resin per 1 aq. medium of pH 4-7, isolating the adsorbed resin and pro-insulin and desorbing the pro-insulin. This method produces pro-insulin with correctly bonded Cys bridges. Compared with known methods it involves fewer stages (esp. no sulphitolysis or cyanogen bromide cleavage) and overall losses during purification are reduced, i.e. the process is quicker and gives better yields. Sequences of insulin chain A, B and C are given in AAR68895-97. Sequences of pro-insulin 1-4 are given in AAR68898-901. (Updated on 25-MAR-2003 to correct
               AAW93414
                                                                                                                                                                                                                                         Sequence 97
                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Page 10-11; 15pp; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Prodn. of pro-insulin with correct dissulphide bridges - by treating recombinant precursor protein with mercaptan in alkali and in presenchaotropic agent, then isolation on hydrophobic resin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 1994-177718/22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            02-DEC-1992;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chaotropic agent.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pro-insulin; A-chain; B-chain; C-chain; disulphide; mercaptan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human pro-insulin
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02-MAR-1995
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (FARH ) HOECHST AG.
                                                                                                                                                                                                   Local
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                                                                                                GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 95
                                                                                                                                                 ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA 60
            standard; protein;
                                                                                                                                   ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC
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                                                                                                                                                                                       Conservative
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(first entry)
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               97
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Pred. No. 5.3e-47;
0; Mismatches 1
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Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                 This invention describes novel fast acting insulin derivatives which have a Asm, residue at position B3 and B27-B29 replaced with another naturally occurring neutral or acidic amino acid, and with Asm at position A21 optionally replaced by Asp, Gly, Ser, Thr or Ala, and Phe at position B1, and the amino acid at position B1 are optionally deleted. Such derivatives can be used for treating diabetes. The derivatives have a faster onset of action than that of wild-type human insulin, especially when administered subcutaneously
                                                                                                                                    06-APR-2000
                                                                                                                                                          AAY51222;
                                                                                                                                                                               AAY51222 standard; protein; 98
                                                                                                                                                                                                                                                                                                                                                                           Sequence 97
                                                                                                             Human preproinsulin B-chain protein analog His(B0).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New fast acting insulin variants - with aminoacid substitutions positions B3, B27, B28 and B29.
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                     DE19825447-A1
                                                      Synthetic
                                                                          Insulin; human; antidiabetic; zinc; diabetes mellitus; treatment;
pharmacodynamic; analog; B chain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 38; Page 17-18; 28pp; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ertl J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-JUN-1998;
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                                                                                                                                                                                                                                                                                                                                           96.9%;
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                                                                                                                                                                                                                                                                                                                                           Score 498; DB 2;
Pred. No. 5.3e-47;
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09-DEC-1999

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RESULT 12
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This invention describes novel human insulin analogs (I) and their salts. which have antidiabetic activity. (I), also their complexes with zinc, are used for treatment of diabetes mellitus, types I or II. (I) have increased zinc-binding capacity, form stable complexes with zinc and compared with native human insulin have a delayed onset of activity profile, so provide better control of diabetes following subcutaneous injection. Zinc-free formulations do not have slow-release properties, so variation of the zinc content provides control of pharmacodynamics (not possible with native human insulin), e.g. tailored to the requirements of individual patients. This sequence represents a human preproinsulin B chain analog which is used in the method of the invention
WPI; 2000-098618/09
                                                                                                                                                                                                                                                                                                                                                             pharmacodynamic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 98
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                                       Ertl J,
                                                                                                                                                                    06-JUN-1998;
                                                                                                                                                                                                                                                        DE19825447-A1
                                                                                                                                                                                                                                                                                                                      Synthetic.
                                                                                                                                                                                                                                                                                                                                                                               Insulin; human; antidiabetic; zinc; diabetes mellitus; treatment;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY51223 standard; protein; 99
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                                       Habermann P,
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                                                                                                                                                                                                                                                                                                                                                           analog; B
                                                                                                                                                                                                                                                                                                                                                                                                                         B-chain protein analog His(B-1).
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                                         Geisen
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Best Local S
Matches 95
This invention describes novel human insulin analogs (I) and their salts. which have antidiabetic activity. (I), also their complexes with zinc, are used for treatment of diabetes nellitus, types I or II. (I) have increased zinc-binding capacity, form stable complexes with zinc and compared with native human insulin have a delayed onset of activity profile, so provide better control of diabetes following subcutaneous
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                                                                                                                                                                                                                                                             New insulin analogs and their zinc complexes, activity, for treating diabetes mellitus.
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                                                                                                                                                                                                       29; Page 20; 22pp; German.
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                                                                                                                                                                                                                                      This invention describes novel fast acting insulin derivatives which have a Asn residue at position B3 and B27-B39 replaced with another naturally occurring neutral or acidic amino acid, and with Asn at position A21 optionally replaced by Asp, Gly, Ser, Thr or Ala, and Phe at position B1, and the amino acid at position B1 are optionally deleted. Such derivatives can be used for treating diabetes. The derivatives have a faster onset of action than that of wild-type human insulin, especially when administered subcutaneously
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      injection. Zinc-free formulations do not have slow-release properties, so variation of the zinc content provides control of pharmacodynamics (not possible with native human insulin), e.g. tailored to the requirements of individual patients. This sequence represents a human preproinsulin B chain analog which is used in the method of the invention
                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20-JUN-1997;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fast acting insulin variants 
ltions B3, B27, B28 and B29.
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                                                                                                Conservative
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                                                                                                                                                                                                                           Query Match
Best Local S
Matches 93
                                                                                                                                                                                                                                                                                                                                                                                                                          This invention describes novel fast acting insulin derivatives which have a Asn residue at position B3 and B27-B29 replaced with another naturally occurring neutral or acidic amino acid, and with Asn at position A21 optionally replaced by Asp, Gly, Ser, Thr or Ala, and Phe at position B1, and the amino acid at position B1 are optionally deleted. Such derivatives can be used for treating diabetes. The derivatives have a faster onset of action than that of wild-type human insulin, especially
                                                                                                                                                                                                                                                                                                                                         Sequence 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New fast acting insulin variants - with aminoacid substitutions positions B3, B27, B28 and B29.
                                                                                                                                                                                                                                                                                                                                                                                                  when administered subcutaneously
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                   US-08-389-487-7
US-09-134-836-4
US-09-136-305A-4
US-09-947-563-4
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US-09-99-307-6
US-09-701-968-9
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US-09-099-307-1
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; Patent No. 5986048; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 1
                                                                                                                                                                                                                                    TELEPHONB: (202) 408-4000
TELEPAX: (202) 408-4400
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
LENGTH: 96 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET: 1300 I Street, N.W.
CITY: Washington
STATE: D.C.
COUNTRY: USA
ZIP; 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/134,836
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Rubroder, Franz-Josef
APPLICANT: Keller, Reinhold
TITLE OF INVENTION: Improved process for obtaining
TITLE OF INVENTION: insulin precursors having correctly bonded cystine bridges
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
ADDRESSEE: Finnegan, Henderson, Farrabow, Garrett &
ADDRESSEE: Dunner
STREET: 1300 I Street, N.W.
                                                                                                                        FEATURE:
                                                                                                                                                                MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER: 02
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Leslie McDonell
                                                                                                                                           ORGANISM:
                                                                                                                                                                                                                     STRANDEDNESS:
                                                                                                                                                                                                           TOPOLOGY:
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US-08-508-664-16
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US-09-477-924-2
US-09-723-981-2
US-09-723-896-2
US-09-878-380-1
US-09-878-380-1
US-08-981-661-8
US-08-981-661-8
US-08-981-661-8
US-08-981-661-8
US-08-784-43-1
US-08-589-028-4
US-08-784-582-4
US-08-785-271-4
US-08-789-900-574-5
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  Pred. No. 7.7e-52;
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Result

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Database :

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1: /cgn2\_6/ptodata/1
2: /cgn2\_6/ptodata/1
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5: /cgn2\_6/ptodata/1
6: /cgn2\_6/ptodata/1

Maximum Minimum Total number

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Scoring table:

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Title: Perfect score:

US-10-632-414-3 514 1 ATTSTGNSARFVN

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US-09-386-303A-5
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                                                                                                                                                   Query Match
Best Local
                                                                                                                                 Matches
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SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/386,303A
FILING DATE: 31-Aug-1999
CLASSIFICATION - CUNKNOWN>
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/134,836
FILING DATE: <UNKNOWN>
APPLICATION UNBER: 09/134,836
FILING DATE: <UNKNOWN>
APPLICATION NUMBER: 34,872
REGEDERUT DOCUMER: 34,872
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-4000
TELEPAX: (202) 408-4400
                                                                                                                                                                                                                       LOCATION: 1..96
SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Rubroder, Franz-Josef
Keller, Reinhold
TITLE OF INVENTION: Improved pro
                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                                                                                                                   MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
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                                                                            ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTFKTRREAEDDQVGQVELGGGPGA 60
GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG 96
                                                         ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGA
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                                                                                                                                                                                                                                                        NAME/KEY: Protein
                                                                                                                                                                                                                                                                                                                                                     STRANDEDNESS: single TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                        TYPE: amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STATE: D.C
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                                                                                                                                                                                                                                                                                                  ORGANISM: Escherichia coli
                                                                                                                               Conservative
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RESULT 4
US-08-389-487-7
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Patent No. 6727346
GENERAL INFORMATION:
                                                                                                                                                                                                                           Query Match 98.1%;
Best Local Similarity 99.0%;
Matches 95; Conservative
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SEQUENCE CHARACTERISTICS:
LENGTH: 96 amino acids
TYPE: amino acid
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC COMPUTER:
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                    FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 408-400
TELEFAX: (202) 408-4400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
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                                                                                                  GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCG 96
                                                                            GSLOPLALEGSLOKRGIVEOCCTSICSLYQLENYCG 96
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                                                                                                                                                                                                                                                                                                                                             NAME/KEY: Protein LOCATION: 1..96
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/09/947,563 FILING DATE: 07-Sep-2001 CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM: Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRANDEDNESS: single
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                                                                                                                                                                                                                                                                  Length 96;
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Sequence 7, Application US/08389487 Patent No. 5663291 GENERAL INFORMATION:

Obermeier, Rainer

Martin

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US-09-134-836-4
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INFORMATION FOR SEQ ID NO: 5
SEQUENCE CHARACTERISTICS:
LENGTH: 97 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                             sequence 4, Application US/09134836
Patent No. 5986048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Rubroder, Franz-Josef
APPLICANT: Relier, Reinhold
TITLE OF INVENTION: Improved process for obtaining
TITLE OF INVENTION: insulin precursors having corre
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/389,487
                                                                                                                                                           NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
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TELEPHONE: 202-408-4000
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MEDIUM TYPE: Floppy disk
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CORRESPONDENCE ADDRESS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME: Einaudi, Carol P.
REGISTRATION NUMBER: 32,220
REFERENCE/DOCKET NUMBER: 02481.1424-00000
                                                                                                        STREET:
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TOPOLOGY: lir
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                                                      COUNTRY: USA
                                                                           STATE:
                                                                                      CITY: Washington
                                                                                                                          ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION: 530
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1300 I Street, N.W.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 504; DB 1;
Pred. No. 7.8e-52;
0; Mismatches 1
                                                                                                                                         Farrabow, Garrett
                                                                                                                                                                                        having correctly bonded cystine bridges
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 97;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 4, Application US/09386303A Patent No. 6380355
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (202) 408-44
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE:
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REGISTRATION NUMBER: 34,872
REFERENCE/DOCKET NUMBER: 02
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/386,303A
FILING DATE: 31-Aug-1999
CLASSIFICATION: <Unknown>
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/134,836
FILING DATE: <Unknown>
APPLICATION NUMBER: 09/134,836
FILING DATE: <Unknown>
APPLICATION NUMBER: 09/134,836
FILING DATE: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: amino acide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION:
                                                                                                                                                                                                    COUNTRY: USA
ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: F10ppy disk
                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Rubroder, Franz-Josef
Keller, Reinhold
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 95
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                                                                                                                                                                                                                                                                                    STATE: D.C
                                                                                                                                                                                                                                                                                                                     STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                   CITY: Washington
                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE: Finnegan, Henderson, Farrabow, Garrett &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
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1..96
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                                                                                                                                                                                                                                                                                                                                        Dunner
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                                                                                                                                                                                                                                                                                                                                                                                                                                  Improved process for obtaining
                                                                                                                                                                                                                                                                                                                                                                                                                insulin precursors having correctly bonded cystine bridges
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Pred. No. 3.9e-51;
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RESULT 7
US-09-947-563-4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 94; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
                 INFORMATION FOR SEQ ID NO: 4: SEQUENCE CHARACTERISTICS:
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                                                                                    APPLICATION NUMBER: 09/134,836
FILING DATE: <UNKNOWN:
ATTORNEY/AGENT INFORMATION:
NAME: Leslie McDonell
REGISTRATION NUMBER: 34,872
REFERENCE/DOCKET NUMBER: 02481.1600-00000
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                               COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOPTMARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                     ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
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REFERENCE/DOCKET NUMBER: 02481.1600-00000
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: Improved process for obtaining insulin precursors having correctly bonded cystine bridges
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Rubroder, Franz-Josef
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
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                                                                                                                                                                                                                                       APPLICATION NUMBER: US/09/947,563 FILING DATE: 07-Sep-2001 CLASSIFICATION: Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGA 60
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LOCATION:
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TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
                                                      TELEPHONE: (202) 408-4000
TELEFAX: (202) 408-4400
                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: D.C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
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Pred. No. 3.9e-51;
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Best Local (
               Query Match
Best Local Similarity
                                                                       TYPE: Ami
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
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Sequence 4, Application US/08160376A Patent No. 5473049
                                                                                                                        APPLICATION NUMBER: US/08/160,376A FILING DATE: December 1, 1993 CLASSIFICATION: 530 PRIOR APPLICATION DATA: APPLICATION DATA: APPLICATION NUMBER: GE P 4240420.7 FILING DATE: December 2, 1992 ATTORNEY/AGENT INFORMATION:

NAME: Barbara V. Maurer, Esq. REGISTRATION NUMBER: 31,287
REFERENCE/DOCKET NUMBER: HOE 92/F 384
TELECOMMUNICATION INFORMATION:
TELEPHONE: (908) 231,4079
                                                                                 TELEPHONE: (908) 231-40
TELEFAX: (908) 231-2255
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: PROC
TITLE OF INVENTION: POSS
TITLE OF INVENTION: CYST
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS:
               SEQUENCE CHARACTERISTICS:
LENGTH: 97 Amino Acids
TYPE: Amino Acid (AA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 08876-1258
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Obermeier, RappLICANT: Gerl, Martin APPLICANT: Ludwig, Jurge APPLICANT: Sabel, Walter
                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IEM 386
OPERATING SYSTEM: WINDOWS 3.1
SOFTWARE: WORDERFECT 5.1
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET: Rt. 202-206 No. 5473049th/P.O. Box 2500 CITY: Somerville STATE: New Jersey COUNTRY: U.S.A. ZIP: 08876-1258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDIUM TYPE: DISKETTE, 3.5 INCH, 1.44 Mb STORAGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Match 96.9%;
Local Similarity 98.9%;
Les 94; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: Protein LOCATION: 1..96 SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY: linear MOLECULE TYPE: protei ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 95
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Sabel, Walter
not relevant
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Pred. No. 3.9e-51;
0; Mismatches 1
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96.9**%**;

Score 498; DB 1; Pred. No. 3.9e-51;

Length 97;

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APPLICANT: ERTL, JOHANN
APPLICANT: HABERMANN, PAUL
APPLICANT: GEISEN, KARL
APPLICANT: SEIPKE, GERHARD
TITLE OF INVENTION: NOVEL INSULIN DERIVATIVES HAVING A RAPID ONSET OF ACTION
FILE REFERENCE: 02481.1597-00000
CURRENT APPLICATION NUMBER: US/09/099,307A
CURRENT APPLICATION NUMBER: 19726167.1
FARLIER PILING DATE: 1997-06-20
NUMBER OF SEQ ID NOS: 20
SOPTWARE: PATENTION OF SEQ ID NOS: 20
SEQ ID NO 6
LENGTH: 97
TYPE: PRT
ORGANISM: Homo mapiens
US-09-099-307-6
                                                                                                                                                                                                                APPLICANT: EXTL, JOHANN
APPLICANT: HABERMANN, PAUL
APPLICANT: HABERMANN, KARL
APPLICANT: SEIFKE, GERHARD
APPLICANT: SEIFKE, GERHARD
APPLICANT: WOLLMER, AXEL
TITLE OF INVENTION: NOVEL INSULIN ANALOGS WITH ENH
FILE REFERENCE: 02481.1719-00000
CURRENT APPLICATION NUMBER: US/09/701,968
CURRENT FILING DATE: 2000-12-06
NUMBER OF SEQ ID NOS: 15
80PTWARE: PRIENTIN VET. 2.1
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US-09-701-968-7
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US-09-099-307-6
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       Query Match 96.8%;
Best Local Similarity 99.0%;
Matches 95; Conservative
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Best Local Similarity 97.9%;
Matches 93; Conservative
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                                                                                                                                                          ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
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   Score 497.5; DB 4;
Pred. No. 4.6e-51;
0; Mismatches 0;
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                                                                         Length 98;
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; SOFTWARE: Patentin Ver. 2.1
; SEQ ID NO 8
; LENGTH: 99
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-701-968-8
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; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-701-968-9
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US-09-701-968-8
                                                                                                                                                                                                                     GENERAL INFORMATION:
APPLICANT: ERTL, JOHANN
APPLICANT: HABERMANN, PAUL
APPLICANT: HABERMANN, PAUL
APPLICANT: GEISEN, KARL
APPLICANT: WOLLMER, AXEL
APPLICANT: WOLLMER, AXEL
TITLE OF INVENTION: NOVEL INSULIN ANALOGS WITH ENHANCED ZINC BINDING
FILE REFERENCE: 02481.1719-0000
CURRENT FPLICATION NUMBER: US/09/701,968
CURRENT APPLICATION NUMBER: US/09/701,968
CURRENT FILING DATE: 2000-12-06
NUMBER OF SEQ ID NOS: 15
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 9
LENGTH 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 9, Application US/09701968 Patent No. 6686177 GENERAL INFORMATION:
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APPLICANT: ERTI, JOHANN
APPLICANT: HERETMANN, PAUL
APPLICANT: GEISEN, KARL
APPLICANT: SEIFKE, GERHARD
APPLICANT: WOLLMER, AXEL
APPLICANT: WOLLMER, AXEL
TITLE OF INVENTION: NOVEL INSULIN ANALOGS WITH ENHANCED ZINC BINDING
FILE REFERENCE: 02481.1719-00000
CURRENT APPLICATION NUMBER: US/09/701,968
CURRENT FILING DATE: 2000-12-06
NUMBER OF SEQ ID NOS: 15
                                                                          Matches
                                                                                            Query Match
Best Local
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Best Local Similarity
Matches 95; Conserv
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                                                                                          Local Similarity
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                                                                          95;
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ATTSTGNSARHAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGG
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                                    ATTSTGNSAR---FVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGG
                                                                          Conservative
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                                                                                          96.6%;
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                                                                        Score 496.5; DB 4
Pred. No. 6.2e-51;
0; Mismatches 0
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Pred. No. 5.3e-51;
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Sequence 8, Application US/09099307A
Patent No. 6221633
Patent No. 6221633
GENERAL INFORMATION:
APPLICANT: ERTL, JOHANN
APPLICANT: ERTL, JOHANN
APPLICANT: GEISEN, KARL
APPLICANT: SELPKE, GERHARD
TITLE OF INVENTION: NOVEL INSULIN DERIVATIVES HAVING A RAPID ONSET OF ACTION
FILE REFERENCE: 02481.1597-00000
CURRENT APPLICATION NUMBER: US/09/099,307A
CURRENT FILING DATE: 1998-06-18
EARLIER FILING DATE: 1997-06-20
INDMER OF SEQ ID NOS: 20
SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 8
LENGTH: 97
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                    GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: HABERMANN, PAUL
APPLICANT: GEISEN, KARL
APPLICANT: GEISEN, KARL
APPLICANT: SEIPKE, GERHARD
TITLE OF INVENTION: NOVEL INSULIN DERIVATIVES HAVING A RAPID ONSET OF ACTI
FILE REFERENCE: 02481.1597-00000
CURRENT APPLICATION NUMBER: US/09/099,307A
CURRENT APPLICATION NUMBER: U5/09/099,307A
CURRENT FILING DATE: 1998-06-18
EARLIER APPLICATION NUMBER: 19726167.1
EARLIER APPLICATION NUMBER: 19726167.1
SEARLIER APPLICATION NUMBER: 19726167.1
EARLIER APPLICATION NUMBER: 19726167.1
EARLIER APPLICATION NUMBER: 19726167.1

CURBEN OF SEQ ID NOS: 20
SOFTWARE: Patentin Ver. 2.0
SOFTWARE: Patentin Ver. 2.0
SOFTWARE: Homo sapiens
US-09-099-307-7
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Best Local Similarity
Matches 93; Conserv
                                                                                   Matches
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                                                                                                       Query Match
Best Local Similarity
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ATTSTGNSARFVKQHLCGSHLVEALYLVCGERGFFYTIKTRREAEDPQVGQVELGGGPGA
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97.9%;
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                                                                              Score 492; DB 3; Length 97; Pred. No. 2e-50; Indels 0; Mismatches 2; Indels
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SOFTWARE: PATENTIN Ver. 2.0
SEQ ID NO 11
LENGTH: 97
TYPE: PRT
ORGANISM: Homo sapiens
US-09-099-307-11
Search completed: May 20, Job time : 45 secs
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Matches 93
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APPLICANT: HABERWANN, PAUL
APPLICANT: GEISEN, KARL
APPLICANT: SEIPKE, GERHARD
TITLE OF INVENTION: NOVEL INSULIN DERIVATIVES HAVING A RAPID ONSET OF ACTION
FILE REFERENCE: 02481.1597-00000
CURRENT APPLICATION NUMBER: US/09/099,307A
CURRENT FILING DATE: 1998-06-18
EARLIER APPLICATION NUMBER: 19726167.1
EARLIER FILING DATE: 1997-06-20
NUMBER OF SEQ ID NOS: 20
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                                                                 GSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 96
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Minimum DB seq length: 0
Maximum DB seq length: 200000000
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Perfect score:
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                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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Sequence 3, Appli Sequence 2, Appli Sequence 5, Appli Sequence 4, Appli Sequence 21, Appl Sequence 22, Appl Sequence 196, App Sequence 125, App Sequence 3, Appli Sequence 9, Appli Sequence 6, Appli Sequence 125, App Sequence 125, App Sequence 125, App	Description

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	Sequence 2,			Sequence 4,	Sequence 2,		Sequence 2,	0.4	5	Ŋ	ю 2	62	Sequence 63,	Sequence 44	Sequence 26	Sequence 7,		Sequence 44	Sequence 3,	Sequence 44	Sequence 44	Seguence 44		Sequence 20			Sequence 44		Seguence 2,		•
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### ALIGNMENTS

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TITLE OF INVENTION A METHOD FOR PURIFYING PREPROINSULIN FILE REFERENCE: DEAV2002/0053 US NP FILE REFERENCE: DEAV2002/0053 US NP CURRENT APPLICATION NUMBER: US/10/632,414 CURRENT FILING DATE: 2003-08-01 PRIOR APPLICATION NUMBER: 60/433,726 PRIOR FILING DATE: 2002-12-16 PRIOR FILING DATE: 2002-12-16 PRIOR FILING DATE: 2002-08-01 NUMBER OF SEQ ID NOS: 4 SOFTWARE: PATENTIAL 2002-08-01 NUMBER: PATENTALE: PATENTIAL 2002-08-01 NUMBER: PATENTALE: PATENTIAL 2002-08-01 NUMBER: PATENTALE: PATENTIAL 2002-08-01 NUMBER: PATENTALE: PATENTIAL 2002-08-01 NUMBER: PATENTIAL 2002-
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Publication No. US20050080000A1
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APPLICANT: THUROW, Horst
APPLICANT: BLUMENSTOCK, Hans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE: OTHER INFORMATION: Description of Artificial Sequence:Preproinsulin OTHER INFORMATION: II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Artificial Sequence
                                                               ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA 60
ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGFGA 60
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HAVENITH, Chantalle
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RESULT 3
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Patent No. US20020156234A1
GENERAL INFORMATION:
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SEQ ID NO 2
LENGTH: 96
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Best Local
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APPLICANT:
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PRIOR FILING DATE: 2002-08-01
NUMBER OF SEQ ID NOS: 4
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CURRENT FILING DATE: 2003-08-01
PRIOR APPLICATION NUMBER: 60/433,726
PRIOR FILING DATE: 2002-12-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: A METHOD FOR PURIFYING PREPROINSULIN FILE REFERENCE: DEAVZ002/0053 US NP
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
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SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/947,563
FILING DATE: 07-Sep-2001
                                                                          ZIP: 20005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: Improved process for obtaining insulin precursors having correctly bonded cystine bridges
                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Rubroder, Franz-Josef
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
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STREET: 1300 I Street, N.W.
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                                                                                                                                                                                                 STATE: D.C
                                                                                                                                                                                                                  CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATTSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGA 60
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                                                                                                                                                                               COUNTRY: USA
                                                                                                                                                                                                                                                                               ADDRESSEE:
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BLUMENSTOCK, Hans
HAVENITH, Chantalle
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                                                                                                                                                                                                                                                                             Finnegan, Henderson, Farrabow, Garrett &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98.8%; Score 508; DB 17; 100.0%; Pred. No. 2.1e-48;
                                                                                                                                                                                                                                                                                                                                                                                  Reinhold
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US-09-947-563-4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
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TELEFAX: (202) 4.08
INFORMATION FOR SEQ ID NO: 5:
                                                                                                                                            COUNTRY: USA
ZIP: 2005-3315
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/947,563
FILING DATE: 07-Sep-2001
CLASSIFICATION: CUnknown>
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 09/134,836
FILING DATE: <UDACHOWID
ATTORNEY/AGENT INFORMATION:
NAME: Leslie McDonell
REGISTRATION NUMBER: 34,872
REFERENCE/DOCKET NUMBER: 02481.1600-00000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY: linear MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: 09/134,836
FILING DATE: «Unknown»
ATTORNEY/AGENT INFORMATION:
NAME: Leelie McDonell
REGISTRATION NUMBER: 34,872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: Improved process for obtaining
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Rubroder, Franz-Josef
Keller, Reinhold
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS:
LENGTH: 96 amino acids
TYPE: amino acid
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                                                                                                                                                                                                                                                                                                                                                                                     CITY: Washington STATE: D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                               STREET: 1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE: Finnegan, Henderson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: Protein LOCATION: 1..96
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CLASSIFICATION: <Unknown>
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99.0%;
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Pred. No. 5.7e-48;
D; Mismatches 1
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TELECOMMUNICATION INFORMATION:

(202)

408-4000

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PRIOR APPLICATION NUMBER: 2004-06-17
PRIOR APPLICATION NUMBER: 60/478,818
PRIOR FILING DATE: 2003-06-17
PRIOR APPLICATION NUMBER: 60/549,539
PRIOR FILING DATE: 2004-03-04
NUMBER OF SEQ ID NOS: 196
SOPTWARE: Patentin version 3.1
SEQ ID NO 21
LENGTH:
RESULT 6
US-10-869-040-22
; Sequence 22, Application US/10869040
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TYPE: PRT
; ORGANISM: Macaca fasicularis
US-10-869-040-21
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Best Local Similarity 98.9%;
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CURRENT APPLICATION NUMBER: US/10/869,040
CURRENT FILING DATE: 2004-06-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Van Rooijen, Gijs
TITLE OF INVENTION: Methods for the Production of Insulin in Plants
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Moloney, Maurice M. APPLICANT: Boothe, Joseph
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (202) 4
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TOPOLOGY: linear MOLECULE TYPE: protein ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE DESCRIPTION: SEQ ID NO: 4:
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                                                                                                                                                                                                                                         85; Conservative
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                                                                                                                                 71 SLOKRGIVEOCCTSICSLYOLENYC 95
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                                                                                               SLOKRGIVEQCCTSICSLYQLENYC 109
                                                                                                                                                                  FVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGAGSLQPLALEG 84
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TYPE: amino acid
STRANDEDNESS: single
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Escherichia coli
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Nykiforuk, Cory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/10869040
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1..96
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100.0%; Pred. No. 5e-43;
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Pred. No. 2.7e-47;
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                                                                                                                                                                                                                   ; LENGTH: 257
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Insulin fusion protein US-10-869-040-196
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; LENGTH: 110
; TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/549,539
PRIOR FILING DATE: 2004-03-04
NUMBER OF SEQ ID NOS: 196
SOFTWARE: PatentIn version 3.1
SEQ ID NO 196
                                                                                                                                    Matches
                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
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Best Local (
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Van Rooijen, Gijs
TITLE OF INVENTION: Methods for the Production of Insulin in Plants
FILE REFERENCE: 9369-301
CURRENT APPLICATION NUMBER: US/10/869,040
CURRENT FILING DATE: 2004-06-17
PRIOR APPLICATION NUMBER: 60/478,818
PRIOR FILING DATE: 2003-06-17
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APPLICANT: Van Rooijen, Gije
TITLE OF INVENTION: Methods for the Production of Insulin in Plants
FILE REFERENCE: 9369-301
CURRENT APPLICATION NUMBER: US/10/869,040
CURRENT FILING DATE: 2004-06-17
PRIOR APPLICATION NUMBER: 60/478,818
PRIOR FILING DATE: 2003-06-17
PRIOR APPLICATION NUMBER: 60/478,539
PRIOR FILING DATE: 2004-03-04
NUMBER: 07-580 ID NOS: 196
NUMBER: 07-580 ID NOS: 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Moloney, Maurice M.
APPLICANT: Boothe, Joseph
APPLICANT: Keon, Richard
APPLICANT: Nykiforuk, Cory
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APPLICANT: Boothe, Joseph
APPLICANT: Keon, Richard
APPLICANT: Nykiforuk, Cory
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    63 LQPLALEGSLQKRGIVEQCCTSICSLYQLENYC 95
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                                             TRGGQHTTFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGAGS
                                                                        TSTGNSARFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGAGS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Application US/10869040
                                                                                                                                    Conservative
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                                                                                                                                                      88.7%;
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                                                                                                                             Score 456; DB 17; Length 257; Pred. No. 3.7e-42; O; Mismatches 7; Indels
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US-09-205-658-125
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; ORGANISM: Homo sapiens
US-09-205-658-125
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CURRENT FILING DATE: 1998-12-03
EARLIER APPLICATION NUMBER: 08/857,076
EARLIER FILING DATE: 1997-05-15
EARLIER APPLICATION NUMBER: 08/88,534
EEARLIER APPLICATION NUMBER: US98/10080
EARLIER FILING DATE: 1997-07-07
EARLIER FILING DATE: 1998-05-15
EARLIER FILING DATE: 1998-05-15
                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: Filvaroff, Ellen H.
APPLICANT: Okumu, Franklin W.
APPLICANT: Okumu, Franklin W.
TITLE OF INVENTION: USE OF INSULIN FOR THE TREATMENT OF CARTILAGENOUS DISORDERS
FILE REFERENCE: P1786RIUS
CURRENT APPLICATION NUMBER: US/09/815,229
CURRENT FILING DATE: 2001-03-22
PRIOR APPLICATION NUMBER: US 60/192,103
PRIOR PILING DATE: 2000-03-24
                                                                                                                                                                                                                             SEQ ID NO 3
LENGTH: 110
TYPE: PRT
ORGANISM: Homo sapiens
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Best Local
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Best Local Similarity
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                                                                                                                                        Matches
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APPLICANT: Ogg, Scott
TITLE OF INVENTION: THERAPEUTIC AND DIAGNOSTIC
TITLE OF INVENTION: IMPAIRED GLUCOSE TOLERANCE
FILE REFERENCE: 00786/351004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS:
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LEGSLOKRGIVEQCCTSICSLYQLENYC 95
                                                         AAAFVNQHLCGSHLVEÄLYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGAGSLQPLA
                                                                                                                                      Conservative
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Pred. No. 2.3e-42;
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Pred. No. 2.3e-42;
1; Mismatches 2; Indels
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CURRENT APPLICATION NUMBER: US/09/804,409A
CURRENT FILING DATE: 2001-03-12
NUMBER OF SEQ ID NOS: 18
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 9
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Patent No. US20020155100A1
GENERAL INFORMATION:
APPLICANT: KIEFFER, TIMOTHY J.
APPLICANT: CHEUNG, ANTHONY T.
APPLICANT: CHEUNG, COMPOSITIONS AND METHODS FOR REGULATED PROTEIN
TITLE OF INVENTION: EXPRESSION IN GUT
                                                                                                                                                             SOFTWARE: PatentIn version 3.0 SEQ ID NO 6
                  Query Match
Best Local Similarity
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Best Local Similarity
  Matches
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                                                                                                  LENGTH: 110
TYPE: PRT
ORGANISM: Homo s
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PRIOR FILING DATE: 2001-02-09
PRIOR PPLICATION NUMBER: US 60/248,819
PRIOR FILING DATE: 2000-11-14
PRIOR APPLICATION NUMBER: US 60/248,478
PRIOR PILING DATE: 2000-11-13
PRIOR APPLICATION NUMBER: US 60/237,929
PRIOR PRIOR PRIOR PRIOR NUMBER: US 60/237,929
                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE TITLE OF INVENTION: AGENTS ACROSS CELLULAR BARRIERS FILE REFERENCE: 057220-0303 CURRENT APPLICATION NUMBER: US/09/969,748C CURRENT FILING DATE: 2002-12-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: ARIZEKE PHARMACEUTICALS, APPLICANT: HOUSTON, Lou, L. APPLICANT: SHERIDAN, Philip, J.
                                                                                                                                                                                                    NUMBER OF SEQ ID NOS: 115
                                                                                                                                                                                                                         PRIOR FILING DATE: 2000-10-02
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ORGANISM: Homo
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GLYNN, Jacqueline, M.
CHAPIN, Steven
BASU, Amaresh
Conservative
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                  96.6%;
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                  Score 454; DB 10;
Pred. No. 2.3e-42;
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Pred. No. 2.3e-42;
1; Mismatches 2;
  Mismatches
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; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-038-686-1
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LENGTH; 110
TYPE; PRT
; ORGANISM; Homo sapiens
US-09-963-693-125
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US-09-963-693-125
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TITLE OF INVENTION: AUTOANTIGEN VACCINE
FILE REFERENCE: 10276-067001
CURRENT APPLICATION NUMBER: US/10/038,686
CURRENT FILING DATE: 2002-05-31
PRIOR APPLICATION NUMBER: 60/260,068
PRIOR FILING DATE: 2001-01-05
NUMBER OF SEQ ID NOS: 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local 8
Matches 85
                                                                                                                                                                                                                                                                                                                                                                       Sequence 1, Application US/10038686 Publication No. US20030045467A1 GENERAL INFORMATION:
    Query Match 88.3%;
Best Local Similarity 96.6%;
Matches 85; Conservative
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SEQ ID NO 1
LENGTH: 110
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PRIOR FILING DATE: 1998-12-03
PRIOR APPLICATION NUMBER: 08/857,076
PRIOR ETILING DATE: 1997-05-15
PRIOR APPLICATION NUMBER: 08/888,534
PRIOR APPLICATION NUMBER: 08/888,534
PRIOR FILING DATE: 1997-07-07
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PRIOR APPLICATION NUMBER: U598/10080
PRIOR FILING DATE: 1998-05-15
NUMBER OF SEQ ID NOS: 328
SOPTWARE: PASTSEQ for Windows Version 4.0
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TITLE OF INVENTION: THERAPEUTIC AND DIAGNOSTIC TOOLS FOR
TITLE OF INVENTION: IMPAIRED GLUCOSE TOLERANCE CONDITIONS
PILE REFERENCE: 00786/351004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/963,693
CURRENT FILING DATE: 2001-09-25
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APPLICANT: Ogg, S
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    Score 454; DB 14;
Pred. No. 2.3e-42;
1; Mismatches 2;
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Pred. No. 2.3e-42;
1; Mismatches 2;
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                                            Length 110;
      Indels
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US-10-346-563-2
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Publication No. US20030220229A1
GENERAL INFORMATION:
APPLICANT: Hickey, William F.
Griffin, Ann C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
APPLICANT: Osborne, William R.A.
APPLICANT: Ramesh, Nagarajan
TITLE OF INVENTION: Compositions and Methods for Treating Diabetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2, Application US/10328813 Publication No. US20030113305A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE REFERENCE: P-UW 3264
CURRENT APPLICATION NUMBER: US/10/328,813
CURRENT FILING DATE: 2002-12-23
PRIOR APPLICATION NUMBER: US/09/185,852
PRIOR FILING DATE: 1998-11-04
PRIOR APPLICATION NUMBER: 60/087,660
PRIOR FILING DATE: 1998-06-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 1:
SOFTWARE: PatentIn Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH:
COUNTRY: USA
ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOPTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION UNMBER: US/10/346,563
FILING DATE: 16-Jan-2003
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 23
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, suite 510
CITY: Boston
                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: Proinsulin Peptide Compounds for Detecting
Treating Type I Diabetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             68 LEGSLQKRGIVEQCCTSICSLYQLENYC 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          85;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22 AAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGAGSLQPLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     110
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGAGSLQPLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LEGSLQKRGIVEQCCTSICSLYQLENYC 109
                                                                                                                                                                                                                                                 STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 454; DB 14;
Pred. No. 2.3e-42;
1; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 110;
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Indels

0

Gaps

81

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GenCore version 5.1.6

Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on:

May 20, 2005, 00:32:40 ; Search time 38 Seconds (without alignments) 243.074 Million cell updates/sec

Title:
US-10-632-414-3

Perfect score: 514

Sequence:
1 ATTSTGNSARFVNQHLCGSH......IVEQCCTSICSLYQLENYCG 96

Scoring table:
BLOSUM62
Gapop 10.0 , Gapext 0.5
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Minimum DB seg length: 0 Maximum DB seg length: 2000000000 Post-processing: Minimum Match 0% Total number of hits satisfying chosen parameters:

283416

RESULT 1 B42179 283416 seqs, 96216763 residues

Searched:

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

PIR 79:\*
1: pir1:\*
2: pir2:\*
3: pir3:\*
4: pir4:\*

Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

45	44	43	42	41	40	39	38	37	36	35	34	ω ω	32	31	30
219	221.5	221.5	221.5	221.5	221.5	225.5	228.5	233.5	238.5	239.5	240.5	240.5	240.5	244.5	245.5
42.6	43.1	43.1	43.1	43.1	43.1	43.9	44.5	45.4	46.4	46.6	46.8	46.8	46.8	47.6	47.8
52	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
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S44470	A60414	DANI	A61129	INTK	SONI	INGS	INCB	JQ0362	INMKSQ	INCT	INWH1S	INGT	INCMA	A59151	INMSSP
insulin I2 - North	insulin - slider t	insulin - crested	;	insulin - turkey (	-	insulin - goose	insulin - Chinchil	•		insulin - cat			insulin - Arabian	insulin precursor	insulin - Egyptian

### ALIGNMENTS

insulin precursor - green monkey
(jSpecies: Cercopithecus aethiops (green monkey, grivet)
(jSpecies: Cercopithecus aethiops (green monkey, grivet)
C;Date: 04-Mar-1993 #sequence revision 18-Nov-1994 #text\_change 09-Jul-2004
C;Accession: B42179; A05232; \$\overline{5}16494; S22056
R;Seino, S; Bell, G.I, Li, W.H.
Mol. Biol. Evol. 9, 193-203, 1992
A;Title: Sequences of primate insulin genes support the hypothesis of a slower rate A;Reference number: A42179; MUID:92219953; PMID:1560757
A;Recession: B42179
A;Molecule type: DNA
A;Residues: 1-110 <SEI>
A;Residues: 1-110 <SEI>
A;Residues: 1-110 <SEI>
A;Residues: 1-110 <SEI>
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A;Residues: 1-110 <SEI>
A;Residues: 1-110 <SEI>
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RESULT 2 JQ0178 JQ0178 Insulin precursor - crab-eating macaque C;Species: Macaca fascicularis (crab-eating macaque) C;Date: 07-Sep-1990 #sequence_revision 07-Sep-1990 #text_change 09-Jul-2004 C;Accession: JQ0178	Db 25 FVNOHLCSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGAGSLQPLALEG 84  QY 71 SLQKRGIVEQCCTSICSLYQLENYC 95	Query Match 89.5%; Score 460; DB 2; Length 110; Best Local Similarity 100.0%; Pred. No. 6.9e-43; Matches 85; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Matches 85; Indels 0; Mismatches 0; Indels 0; Gaps 0;  Oy 11 FVNOHLCGSHLVEALYLVCGERGFFYTPKTRRBAEDPOVGVELGGGPGAGSLOPLALEG 70	C;Keywords: hormone; pancreas C;Keywords: hormone; pancreas F;1-24/Domain: signal sequence #status predicted <sig> F;25-54/Domain: insulin #status predicted <bch> F;25-54/Domain: insulin #status predicted <mat> F;25-54/90-110/Product: insulin #status predicted <mat> F;57-87/Domain: connecting peptide #status experimental <cpep> F;90-110/Domain: insulin chain A #status predicted <ach> F;31-96/43-109/95-100/Disulfide bonds: #status predicted</ach></cpep></mat></mat></bch></sig>	A;Recession: A05232 A;Rocession: A05232 A;Rosidues: 57-87 <pet> C;Genetics: A;Introns: 63/1 C:Superfamily: insulin</pet>	A; Cross-references UNIPROT: P30407; EMBL:X61092; NID:g22808; PIDN:CAA43405.1; PID:g22809] A; Mote: sequence extracted from NCBI backbone (NCBIN:95185, NCBIP:95194) A; Peterson, J.D.; Nehrlich, S.; Oyer, P.E.; Steiner, D.F. J. Biol. Chem. 247, 4866-4871, 1972 J. Biol. Chem. 247, 4866-4871, 1972 A; Title: Determination of the amino acid sequence of the monkey, sheep, and dog proinsul

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A;Cross-references: GB:J00265; NID:g186429; PIDN:AAA59172.1; PID:g3861 R;Sures, I.; Goeddel, D.V.; Gray, A.; Ullrich, A. Science 208, 57-59, 1980
A;Title: Nucleotide sequence of human preproinsulin complementary DNA. A;Reference number: A94251; MUID:80147417; PMID:6927840
A;Accession: A94251.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Cross-references: GB:J00265; NID:g186429; PIDN:AAA59172.1; PID:g386828 R;Bell, G.I.; Swain, W.F.; Pictet, R.; Cordell, B.; Goodman, H.M.; Ruttes Nature 282, 525-527, 1979
A;Title: Nucleotide sequence of a cDNA clone encoding human preproinsulir A;Reference number: A93216; MUID:80054779; PMID:503234
A;Accession: A93216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: UNIPROT:P01308; GB:J00265; NID:g186429; PIDN:AAA59172.1; PID:g386828 R;Ullrich, A.; Dull, T.J.; Gray, A.; Brosius, J.; Sures, I. Science 209, 612-615, 1980 Science 209, 612-615, 1980 A;Title: Genetic variation in the human insulin gene.
A;Reference number: A94253; MUID:80236313; PMID:6248962
A;Accession: A94253
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A;Title: The nucleotide sequence of cDNA coding for preproinsulin from A;Reference number: JQ0178; MUID:83080474; PMID:6184262
A;Accession: JQ0178
A;Accession: JQ0178
A;Accession: JQ0178
A;Accession: UNIPROT:P30406; GB:J00336; NID:g342121; PIDN:AAA368
C;Superfamily: insulin
C;Superfamily: insulin #status predicted <NAT>
F;25-54,90-110/Product: insulin #status predicted <MAT>
F;25-54/Domain: insulin connecting C peptide #status predicted <CPT>
F;55-89/Domain: insulin connecting C peptide #status predicted <CPT>
F;50-110/Domain: insulin connecting C peptide #status predicted <CPT>
F;50-110/Domain: insulin chain A #status predicted ACH>
C;Date: 23-Oct-1981 #sequence_revision 23-Oct-1981 #text change 09-Jul-2004 C;Accession: A93222; A94253; A93216; A94251; A93144; A92075; A91186; I58114; R;Bell, G.I.; Pictet, R.J.; Rutter, W.J.; Cordell, B.; Tischer, E.; Goodman, Nature 284, 26-32, 1980 A;Title: Sequence of the human insulin gene. A;Reference number: A93222; MUID:80120725; PMID:6243748 A;Accession: A93222
                                                                        A;Cross-references: GB:J00265; NID:g186429; PIDN:AAA59172.1; PID:g386828 R;Nicol, D.S.H.W.; Smith, L.F. Nature 187, 483-485, 1960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: DNA
A; Residues: 1-110 <ULL>
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C;Species: Homo sapiens (man)
C;Date: 23-Oct-1981 #sequence
C;Accession: A93222; A94253;
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A; Residues: 1-110 < BEL2>
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A;Residues: 1-110 <BEL>
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Best Local S
Matches 85
                                                                                                                                                             Residues: 1-110 <SUR>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
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                                                                                                                                                                                                                                                                                                                                                              PID:g386828
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H.M.
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A;Residues: 57-87 < OYB>
R;KO, A.; Smyth, D.G.; Markussen, J.; Sundby, F.
Eur. J. Biochem. 20, 190-199, 1971
A;Title: Amino acid sequence of the C-peptide of human
A;Reference number: A91186; MUID:71257722; PMID:5560404
A;Ancession: A91186
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A;Residues: 25.54;90-110 <NIC>
R;Oyer, P.E.; Cho, S.; Peterson, J.D.; Steiner, D.F.
J. Biol. Chem. 246, 1375-1386, 1971
A;Title: Studies on human proinsulin. Isolation and amino
                                                                                                                                                                                                                                                                                                                                 C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>F;1-54/Domain: signal sequence #status experimental <BCH>F;25-54,Domain: insulin chain B #status experimental <WAT>F;25-54,90-110/Product: insulin #status experimental <WAT>F;57-87/Domain: connecting C peptide #status experimental <CPEP>F;90-110/Domain: insulin chain A #status experimental <ACH>F;90-110/Domain: insulin chain A #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hoppe-Seyler's Z. Physiol. Chem. 354, 659-672, 1973
A,Title: The synthesis of C-peptide of human proinsulin.
A;Reference number: A91658; MUID: 75040007; PMID: 4803504
A;Contents: annotation; synthesis of residues 57-87
R;Geiger, R.; Jaeger, G.; Koenig, W.
Chem. Ber. 106, 2347-2352, 1973
A;Title: Synthesis of the complete sequence of human pxc
A;Reference number: A90914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Note: article in German with English abstract
R;Nathani, V.K.
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A;Map position: 11p15.5-11p15.5
A;Introns: 63/1
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Biochem. J. 310, 869-874, 1995
Biochem. J. 310, 869-874, 1995
A;Title: Sequence requirements for proinsulin processing at the B-chain/C-peptide juncti
A;Reference number: SS8661; MUID:96013185; PMID:7575420
A;Contents: annotation; site-directed mutagenesis study of proteolytic processing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Sieber, P.; Kamber, B.; Hartmann, A.; Joehl, A.; Rinik Helv. Chim. Acta 57, 2617-2621, 1974
A;Title: Totalsynthese von Humaninsulin unter gezielter A;Reference number: A91636; MUID:75077277; PMID:4443293
A;Contents: annotation; synthesis
A;Note: disulfide-bonded human insulin was synthesized;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:L15440; NID:g307071; PIDN:AAA59179.1; PID:g307072 R;Sieber, P.; Kamber, B.; Hartmann, A.; Joehl, A.; Riniker, B.; Rittel,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: protein A; Residues: 57-87 < KOA> R; Residues: 57-87 < KOA> R; Lucassen, A.M.; Julier, C.; Beressi, J.P.; Boitard, C.; Froguel, P.; Lathrop, M.; Nature Genet. 4, 305-310, 1993 A; Title: Susceptibility to insulin dependent diabetes mellitus maps to a 4.1 kb segm A; Reference number: I58114; MUID:93364428; PMID:8358440 A; Accession: I58114; MUID:9366428; PMID:8358440
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A;Accession: A92075
A;Molecule type: protein
A;Residues: 57-87 <0YE>
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                                 LEGSLOKRGIVEQCCTSICSLYQLENYC 95
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                                                                                                               AAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQVELGGGPGAGSLQPLA
                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                      96.6%;
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                                                                                                                                                                                                                              Score 454; DB 1;
Pred. No. 3.1e-42;
1; Mismatches 2;
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A; RCCESSION....A; RECESSION...A; RECESSION...A; REALUS; preliminary
A; Molecule type: DNA
A; Residues: 1-110 <5EI>
A; Cross-references: UNIPROT: P30410; EMBL: X61089; NID: 938251;
A; Cross-references: UNIPROT: P30410; EMBL: X61089; NID: 938251;
A; Cross-references: UNIPROT: P30410; EMBL: X61089; NID: 938251;
                                                                                                                                                                                                                      C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>
F;25-54/Domain: insulin chain B #status experimental <BCH>
F;25-54/Domain: insulin chain B #status experimental <MAT>
F;25-54,90-110/Product: insulin #status experimental <MAT>
F;57-87/Domain: connecting C peptide #status predicted <CPEP>
F;90-110/Domain: insulin chain A #status experimental <ACH>
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C;Date: 04-Mar-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
C;Accession: A42179, S22058
R;Seino, S.; Bell, G.I.; Li, W.H.
Wol. Biol. Evol. 9, 193-203, 1992
A;Title: Sequences of primate insulin genes support the hypothesis of a slo A;Reference number: A42179; MUID:92219953; PMID:1560757
A;Accession: A42179
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R;Devaskar, S.U.; Giddings, S.J.; Rajakumar, P.A.; Carnaghi, L.R.; Menon, R.K.; Zahm, J. Biol. Chem. 269, 8445-8454, 1994
A;Title: Insulin gene expression and insulin synthesis in mammalian neuronal cells. A;Reference number: A53438; MUID:94179230; PMID:8132571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NyAlternate names: preproinsulin C; Species: Oryctolagus cuniculus (domestic rabbit) C; Date: 24-Apr-1994 #sequence revision 23-Aug-1997 C; Accession: A53438; A01581
                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Smith, L.F.
Am. J. Med. 40, 662-666, 1966
Am. J. Med. 40, 662-666, 1966
A;Title: Species variation in the amino acid sequence of insulin.
A;Reference number: A90029; MUID:66160119; PMID:5949593
A;Accession: A01581
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A;Residues: 1-110 <DEV>
A;Crost-references: UNIPROT:P01311; GB:U03610; NID:g467970; PIDN:AAA19033.1; PID:g46797
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FVNQHLCGSHLVEALYLVCGERGFFYTFXSRREVEELQVGQAELGGGPGAGGLQPSALEL
                        FVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGAGSLQPLALEG 70
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                                                                                                                           Score 411; DB 1; Length 110; Pred. No. 1.5e-37;
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Pred. No. 6.6e-42;
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A;Molecule type: protein
A;Residues: 1-30;66-86 <HAR>
A;Residues: 1-30;66-86 <HAR>
A;Cross-references: UNIPROT: P01310
R;Tager, H.S.; Steiner, D.F.
J. Biol. Chem. 247, 7936-7940, 1972
A;Title: Primary structures of the proinsulin connecting peptides of the rat
                                                                                                                                                                                                                                                                                                    insulin precursor - horse

C;Species: Equus caballus (domestic horse)

C;Date: 13-Jul-1981 #sequence_revision 13-Jul-1981 #text_change 09-Jul-2004

C;Accession: A0150: A92120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>
F;1-54/Domain: signal sequence #status experimental <BCH>
F;25-54/Domain: insulin chain B #status experimental <MAT>
F;25-54,90-110/Poroduct: insulin #status experimental <ACH>
F;57-87/Domain: connecting peptide #status predicted <CPEP>
F;90-110/Domain: insulin chain A #status experimental <ACH>
F;31-96,43-109,95-100/Disulfide bonds: #status experimental
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A; Residues: 25-54; 90-110 <SMIT>
R; Peterson, J.D.; Nehrlich, S.; Oyer, P.E.; Steiner, D.F.
J. Biol. Chem. 247, 4866-4871, 1972
A; Title: Determination of the amino acid sequence of the
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R;Kwok, S.C.M.; Chan, S.J.; Steiner, D.F.
J. Biol. Chiem. 258, 2357-2363, 1983
A;Title: Cloning and nucleotide sequence analysis of the A;Reference number: A92413; MUID:83109071; PMID:6296142
A;Accession: A92413;
                                                                                                                                                                                                                                    R;Harris, J.I.; Sanger, F.; Naughton, M.A.
Arch. Biochem. Biophys. 65, 427-428, 1956
A;Title: Species differences in insulin.
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A; Residues: 65-85, 'I', 87 < PET>
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A;Residues: 1-110 <SMI>
A;Cross-references: UNIPROT:P01321; GB:V00179; GB:J00042; NID:g994; PIDN:CAA23475.1;
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                                                                                                                                                                                                          A; Reference number: A90082
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C;Species: Canis lupus familiaris (dog)
C;Date: 24-Apr-1984 #sequence revision 15-Nov-1984 #text_change 09-Jul-2004
C;Accession: A92413; A01587; S16493
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Pred. No. 8.5e-37;
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C;Species: Mus musculus (house mouse)
C;Date: 31-Mar-1992 #sequence revision 14-Jul-1994 #text_change 09-Jul-2004
C;Accession: A26342; B48172; Ā61012; B01592
R;Wentworth, B.M.; Schaefer, I.M.; Villa-Komaroff, L.; Chirgwin, J.M.
J. Mol. Evol. 23, 305-312, 1986
A;Title: Characterization of the two nonallelic genes encoding mouse prepro A;Reference number: A92965; MUID:87169768; PMID:3104603
A;Accession: A26342
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A,Residues: 33-63 <TAG>
C,Comment: X's at positions 31-32 and 64-65 represent paired be
C,Superfamily: insulin
C,Keywords: hormone; pancreas
F,1-30/Domain: insulin chain 8 #status experimental <BCH>
F,1-30,66-86/Product: insulin #status experimental <MAT>
F,33-63/Domain: connecting peptide #status experimental <CPEP>
F,66-86/Domain: insulin chain A #status experimental <ACH>
F,7-72,19-85,71-76/Disulfide bonds: #status predicted
A;Introns: 63/1
C;Superfamily: insulin
C;Superfamily: insulin
C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>
F;25-54/Domain: insulin chain B #status experimental <MCT>
F;25-54,90-110/Product: insulin #status experimental <CPEP>
F;57-87/Domain: connecting peptide #status experimental <CPEP>
F;90-110/Domain: insulin chain A #status experimental <ACH>
F;31-96,43-109,95-100/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                       A; Molecule type: protein A; Residues: 25-54; 90-110 C; Genetics:
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A;Residues: 1-110 <SAM>
R;Linde, S; Nielsen, J.H.; Hansen, B.; Welinder, B.S.
J. Chromatogr. 462, 243-254, 1989
A;Title: Reversed-phase high-performance liquid chromatographic analyses of insulin bios A;Reference number: A61012; MUID:89292078; PMID:2661585
A;Accession: A61012
                                                                                                                                                                                                                                                                                                                                     A;Molecule type: protein
A;Residues: 57-87 <LIN>
A;Residues: 57-87 <LIN>
R;Buenzli, H.F.; Glatthaar, B.; Kunz, P.; Muelhaupt, E.; Hum
R;Buenzli, H.F.; Glatthaar, Chem. 353, 451-458, 1972
Hoppe-Seyler's Z. Physiol. Chem. 353, 451-458, 1972
A;Title: Amino acid sequence of the two insulins from mouse
A;Reference number: A01592; MUID:72189455; PMID:5063718
A;Accession: B01592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: UNIPROT:P01326; GB:X04724; NID:g52714; R;Sawa, T.; Ohgaku, S.; Morioka, H.; Yano, S. J. Morioka, H.; Yano, S. J. Morioka, H.; Yano, S. J. Morioka, H.; Yano, S. J. Morioka, H.; Yano, S. J. Morioka, H.; Yano, S. J. Morioka, H.; Status: not compared with conceptual translation A;Status: not compared with conceptual translation
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A; Residues: 1-110 <WEN>
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Pred. No.
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SLOKRGIVEOCCTSICSLYOLENYC 95

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C;Species: Rattus norvegicus (Norway rat)
C;Date: 23-Oct-1981 #sequence revision 23-Oct-1981 #text change 09-Jul-2004
C;Accession: B90789; B94231; C92120; IG4880; A01590; B92120
R;Lomedico, P.; Rosenthal, N.; Efstratiadis, A.; Gilbert, W.; Kolodner, R.;
Cell 18, 545-558, 1979
A;Title: The structure and evolution of the two nonallelic rat preproinsuling A;Reference number: A90789; MUID:80045035; PMID:499284
A;Accession: B90789
                                                                                                                                                                                  C;Superfamily: insulin
C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>
F;25-54/Domain: insulin chain B #status experimental <MAT>
F;25-54,90-110/Product: insulin #status experimental <MAT>
F;57-87/Domain: connecting peptide #status experimental <ACHP
F;90-110/Domain: insulin chain A #status experimental <ACHP
F;31-96,43-109,95-100/Disulfide bonds: #status experimental
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A;Title: Proinsulin and the biosynthesis of insulin.
A;Reference number: A94231; MUID:70067613; PMID:4311938
                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-110 <RES>
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A;Residues: 57-87 <TAG>
R;Romedico, P.T.; Rosenthal, N.; Kolodner, R.; Efstrati;
Ann. N. Y. Acad. Sci. 343, 425-432, 1980
A;Title: The structure of rat preproinsulin genes.
A;Reference number: 151945; MUID:80240379; PMID:6249167
A;Accession: 164880
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J. Biol. Chem. 247, 7936-7940, 1972
A;Title: Primary structures of the proinsulin connecting peptides of the rat and horse.
A;Reference number: A92120; MUID:73061498; PMID:4640931
A;Accession: C92120
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A; Residues: 1-110 < LOM >
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                                                                                            Score 398; DB 1;
Pred. No. 3.8e-36;
4; Mismatches 8
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Pred. No. 3.8e-36;
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ten, B.; Oye
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A;Accession: A;Accession: A;Accession: A;Nolecule type: protein
A;Rolecule type: protein
A;Residues: 25-54;90-110 <STE>
A;Residues: 25-54;90-110 <STE>
A;Residues: 25-54;90-10 <STE>
A;Tager, H.S.; Steiner, D.F.
J. Biol. Chem. 247, 7936-7940, 1972
A;Tile: Primary structures of the proinsulin connecting
A;Tile: Aprimary structures of the proinsulin connecting
A;Tile: Aprimary structures of the proinsulin connecting
A;Tile: Aprimary structures of the proinsulin connecting
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C;Date: 23-Oct-1981 #sequence revision 23-Oct-1981 #text change 09-Jul-2004
C;Accession: A90788; A90789; A94231; B92120; I51945; A01589
R;Cordell, B.; Bell, G.; Tischer, B.; DeNoto, F.M.; Ullrich, A.; Pictet, R.
Cell 18, 533-543, 1979
A;Molecule type: protein
A;Residues: 57-87 <TAR>
R;Lomedico, P.T.; Rosenthal, N.; Kolodner, R
R;Lomedico, P.T.; Rosenthal, V.; Kolodner, R
Ann. N. Y. Acad. Sci. 343, 425-432, 1980
A;Title: The structure of rat preproinsulin
A;Reference number: I51945; MUID:80240379; p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Cell 18, 533-543, 1979
A;Title: Isolation and characterization of Normance number: A90788; MUID:80045034;
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Diabetes 33, 297-300, 1984
A;Title: Sequence of a cDNA encoding Syrian hamster preproinsulin
A;Reference number: I48166; MUID:84133036; PMID:6365663
A;Accession: I48166
                                                                                                                                                                                                                                                                                                                                              A;Cross-references: GB:J00747; NID:g204956; PIDN:AAA41442.1; PID:g204957 R;Steiner, D.F.; Clark, J.L.; Nolan, C.; Rubenstein, A.H.; Margoliash, E.; Aten, Recent Prog. Horm. Res. 25, 207-282, 1969 A;Title: Proinsulin and the biosynthesis of insulin.
A;Reference number: A94231; MUID:70067613; PMID:4311938
A;Accession: A94231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cell 18, 545-558, 1979
A;Title: The structure and evolution of the two nonallelic A;Reference number: A90789; MUID:80045035; PMID:498284
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R;Bell, G.I.; Sanche
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R;Lomedico, P.; Rosenthal, N.; Efstratiadis, A.; Gilbert, W.; Kolodner, R.; Tizard, R.
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A; Residues: 1-110 < RES>
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A, Residues: 1-110 < LOM>
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vision 02-Jul-1996 #text_change 16-Jul-1999
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PMID:6249167
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A;Molecule type: protein
A;Residues: 1-84 <CH2>
A;Residues: 1-85
R;Brown, H.; Sanger, F.; Kitai, R.
Biochem. J. 60, 556-565, 1955
A;Title: The structure of pig and
                                                                                                                                                                                        A;Molecule type: protein
A;Residues: 33-62 <SN2>
R;Blundell, T.; Dodson, G.; Hodgkin,
A;dv. Protein Chem. 26, 279-402, 1972
A;Title: Insulin. the structure in th
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A;Residues: 1-30;31-51 <BRO>
R;Snel, L.; Damgaard, U.
Horm. Metab. Res. 20, 476-480, 1988
A;Title: Proinsulin heterogeneity in
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F;90-110/Domain: insulin chain A #status exp
                                                                              A; Contents: annotation; X-ray crystallography, C; Superfamily: insulin
                                                                                                                                                        A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                          A;Molecule type: protein
A;Residues: 33-38,40-62 <SNE>
A;Note: the authors report th
A;Accession: B60835
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A, Accession: S16492
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A; Residues: 1-34,'Q',36-84 < CHA>
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Science 161, 165-167, 1968
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;Bate: 22-Jun-1981 #sequence revision 22-Jun-1981 #text_change 16-Jul-1999
;Accession: A01583; A94572; S16492; A60835; B60835
;Chance, R.E.; Ellis, R.M.; Bromer, W.W.
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experimental <BCH>
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C;Species: Bos primigenius taurus (cattle)
C;Date: 24-Apr-1984 #sequence_revision_22-Apr-1995 #text_change 09-Jul-2004
C;Date: 24-Apr-1984 #sequence_revision_22-Apr-1995 #text_change 09-Jul-2004
C;Accession: A40909; A92080; A92074; A91185; A90341; S48184; S48185; S46258;
R;D'Agostino, J; Younes, M.A.; White, J.W.; Besch, P.K.; Field, J.B.; Frazier, M.L.
Mol. Endocrinol. 1, 327-331, 1987
A;Title: Cloning and nuclectide sequence analysis of complementary deoxyribonucleic
A;Reference number: A40909; MUID:88288209; PMID:2456452
A;Accession: A40909
A;Molecule type: mRNA
A;Residues: 1-105 cDAA>
A;Cross-references: UNIPROT:P01317; GB:M54979; NID:g163578; PIDN:AAA30722.1; PID:g16
A;Experimental source: fetal pancreas
R;Nolan, C:; Margollash, E:; Peterson, J.D.; Steiner, D.F.
J. Biol. Chem. 246, 2780-2795, 1971
A;Title: The structure of bovine proinsulin.
A;Reference number: A92080; MUID:71166442; PMID:4928892
A;Molecule type: mamber: A92080
                 A;Molecule type: protein
A;Residues: 25-105 <NOL>
R;Steiner, D.F.; Cho, S.; Oyer, P.E.; Terris, S.;
J. Biol. Chem. 246, 1365-1374, 1971
    A; Title:
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Proc. Natl. Acad. Sci. U.S.A. 84, 7423-7427, 1987
A;Title: Sequence of a New World primate insulin having
A;Reference number: A39883; MUID:88041119; PMID:3118367
A;Accession: A39883
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A;Molecule type: DNA
A;Residues: 1-108 <SEI>
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C;Date: 27-Nov-1991 #sequence_revision 27-Nov-1991 #text_change 09-Jul-2004
C;Accession: A3983
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F;33-63/Domain: connecting peptide #status experimental <CP
F;64-84/Domain: insulin chain A #status experimental <ACH>
F;77-70,19-83,69-74/Disulfide bonds: #status experimental
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      Isolation and characterization
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83.5%;
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Pred. No. 4.4e-34;
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Pred. No. 4.
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  of proinsulin
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er, M.L.
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RESULT 15 INMS1

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A;Molecule type: protein
A;Molecule type: protein
A;Residues: 25-30,'x',32-42,'X',44-54 <CH2>
A;Residues: 25-30,'x',32-42,'X',44-54 <CH2>
A;Residues: 25-30,'x',32-42,'X',44-54 <CH2>
A;Residues: 25-30,'x',32-42,'X',44-54 <CH2>
Biochem. J. 60, 541-556, 1955
Biochem. J. 60, 541-556, 1955
A;Title: The disulphide bonds of insulin.
A;Reference number: A90343
A;Reference number: amides; disulfides
R;Wenzel, T.; Eckerskorn, C.; Lottspeich, F.; Baumeister, W.
FEBS Lett. 349, 205-209, 1994
A;Title: Existence of a molecular ruler in proteasomes suggested by analysis of degradat
A;Reference number: S46258; MUID:94326921; PMID:8050567
A;Accession: S46258
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Eur. J. Biochem. 223, 759-764, 1994
A;Title: Site-specific oxidation of histidine residues in glycated insulin mediated
A;Title: Site-specific oxidation of histidine lesidues in glycated insulin mediated
A;Title: Site-specific oxidation of histidine residues in glycated insulin mediated
                                                                                                                                                                                                                                                                                                                            C;Keywords: hormone; pancreas
F;1-24/Domain: signal sequence #status predicted <SIG>
F;25-54/Domain: signal sequence #status experimental <BCH>
F;25-54/Bomain: insulin chain B #status experimental <MAT>
F;25-54,85-105/Product: insulin #status experimental <MAT>
F;57-82/Domain: connecting peptide #status experimental <CPEP>
F;85-105/Domain: insulin chain A #status experimental <ACH>
F;85-105/Domain: insulin chain A #status experimental <ACH>
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A;Residues: 57-82 <SAL>
R;Sanger, F.; Thompson, E.O.P.
Biochem. J. 53, 366-374, 1953
A;Title: The amino-acid sequence
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A;Residues: B5-105 <SAN>
R;Sanger, F: Tuppy, H.
Biochem. J. 49, 481-490, 1951
A;Title: The amino-acid sequence in the phenylalanyl chain
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Eur. J. Biochem. 20, 183-189, 1971
A;Title: Bovine proinsulin: amino acid sequence of the
A;Reference number: A91185; MUID:71257721; PMID:5105368
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A;Molecule type: protei
A;Residues: 57-82 <STE>
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A; Accession: A90342
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80
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                                                                                                                                            11 FVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDPQVGQVELGGGPGAGSLQPLALEG
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                                                   SLOKRGIVEOCCTSICSLYOLENYC 95
PPQKRGIVEQCCASVCSLYQLENYC
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81.2%;
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                                                                                                                                                                                                                                              Score 370.5; DB 1;
Pred. No. 3.6e-33;
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밁 insulin 1 precursor - mouse
C;Species: Mus musculus (house mouse)
C;Batce: 24-Apr-1984 #sequence\_revision 14-Jul-1994 #text\_change 09-Jul-2004
C;Accession: B26342; A48172; A01592; B61012
R;Wentworth, B.M.; Schaefer, I.M.; Villa-Komaroff, L.; Chirgwin, J.M.
J. Mol. Evol. 23, 305-312, 1986
A;Tille: Characterization of the two nonallelic genes encoding mouse preproinsulin.
A;Reference number: A92965; MUID:87169768; PMID:3104603 Search completed: May 20, 2005, 00:42:22 Job time : 39 secs 밁 8 ई A;Melecule type: protein
A;Residues: 25-54;88-108 (BUE>
A;Residues: 25-54;88-108 (BUE>
R;Linde, S.; Nislaen, J.H.; Hansen, B.; Welinder, B.S.
J. Chromatogr. 462, 243-254, 1989
J. Chromatogr. 462, 243-254, 1989
A;Title: Reversed-phase high-performance liquid chromatographic analyses of insulin bios A;Reference number: A61012; MUID:89292078; PMID:2661585 A;Residues: 1-108 <SAW>
A;Residues: 1-108 <SAW>
A;Buenzli, H.F.; Glatthaar, B.; Kunz, P.; Muelhaupt, E.; Humbel, R.E.
Hoppe-Beyler's Z. Physiol. Chem. 353, 451-458, 1972
A;Title: Amino acid sequence of the two insulins from mouse (Mus musculus).
A;Reference number: A01592; MUID:72189455; PMID:5063718
A;Accession: A01592 Molecule type: protein Residues: 57-85 <LIN> Superfamily: insulin ¡Keywords: hormone; pancreas
;1.24/Domain: signal sequence #status predicted <SIG>
;1.24/Domain: insulin chain B #status experimental <BCH>
;25-54/Domain: insulin #status experimental <MAT>
;25-54,88-108/Product: insulin #status experimental <MAT>
;57-85/Domain: connecting peptide #status experimental <CPEP>
;88-108/Domain: insulin chain A #status experimental <ACH>
;31-94,43-107,93-98/Disulfide bonds: #status predicted Cross-references: UNIPROT:P01325; GB:X04725; NID:g52712; PIDN:CAA28434.1; PID:g52713; Sawa, T.; Ohgaku, S.; Morioka, H.; Yano, S.

Mol. Endocrinol. 5, 61-67, 1990

Title: Molecular cloning and DNA sequence analysis of preproinsulin genes in the NON; Reference number: A48172; MUID:90372989; PMID:2397023 Query Match 72.0%; Best Local Similarity 82.4%; Matches 70; Conservative Residues: 1-108 <WEN> Status: not compared with conceptual translation Molecule type: DNA 71 SLOKRGIVEQCCTSICSLYQLENYC 95 11 FVNQHLCGSHLVEALYLVCGERGFFYTFKTRREAEDPQVGQVELGGGPGAGSLQFLALEG 70 25 FVKQHLCGPHLVEALYLVCGERGFFYTPKSRREVEDPQVEQLELGGSP--GDLQTLALEV 82 AROKRGIVDOCCTSICSLYQLENYC 107 Score 370; DB 1; Length 108; Pred. No. 4.2e-33; Indels 4; Mismatches 9; Indels 2 Gaps

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MEDITINE=7258016; pubMed=4626369;

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Wheterson J.D., Nehrlich S., Oyer P.E., Steiner D.F.;

Peterson J
EMBL; X61092; CAA43405.1; -.
PIR; B42179; B42179
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InterPro; IPR004825; Ins/IGF/relax.
Pfam; PP00049; Insulin; 1.
PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc_ins; 1.
SMART; SM00078; IIGF; 1.
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MEDLINE=9221953; PubMed=1560757;
MEDLINE=9221953; PubMed=1560757;
Seino S., Bell G.T.,\Li W.;
Seino S., Bell G.T.,\Li W.;
"Sequences of primate insulin genes support the hypothesis of a slower rate of molecular evolution in humans and apes than in monkeys.";
mol. Biol. Evol. 9:193-203(1992).
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eutele
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
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                                                                                                                                               the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
MEDLINE=83080474; PubMed=6184262; DOI=10.1016/0378-1119(82)90004-X;
Wetekam W., Groneberg J., Leineweber M., Wengenmayer F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROPEP
CHAIN
          PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc_ins;
SMART; SM00078; IIGF; 1.
                                                                       EMBL; J00336; AAA36849.1; -. PIR; JQ0178; JQ0178. HSSP; P01308; 1AIO.
                                                                                                                                                                                                                                                                                                                                                                                                                                            Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-JUL-1986 (Rel. 01, Created)
13-AUG-1987 (Rel. 05, Last sequence update)
05-JUL-2004 (Rel. 44, Last annotation update)
                                                                                                                       entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                    "The nucleotide sequence of cDNA coding primate Macaca fascicularis.";
Gene 19:179-183(1982).
                                             InterPro; IPR004825; Ins/IGF/relax.
Pfam; PF00049; Insulin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                  Cercopithecinae; Macaca.
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                                                                                                                                                                                                                                             FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids ar fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.
SUBUNIT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
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    Glucose metabolism; Hormone;

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Pred. No.
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PROPEP CHAIN DISULFID

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; Insulin family; Signal.
By similarity.
Insulin B chain.
C peptide.
Insulin A chain.
Interchain (By similarity).

SIGNAL CHAIN

PROSITE;

metabolism;

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25-OCT-2004 (Rel. 4
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                                                                                    Pfam; PF00049; Insulin; 1.
PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc_ins; 1.
SMART; SM00078; IIGF; 1.
                                                                                                                                                                                           entities requires a license agreement (Some send an email to license@isb-sib.ch).
                                                                                                                                                                                                    modified and this statement entities requires a license
                                                                                                                                                                                                                                           between the Swiss Institute of Bioinfo
the European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gorilla gorilla gorilla (Lowland gorilla).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Gorilla.
                                                                                                                                                                EMBL; AY137500; AAN06935.1;
                                                                                                                                                                                                                                                                     This
                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A. MEDLINE=22833521; PubMed=12952878; DOI=10.1101/gr.948003;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9595;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glucose metabolism;
SIGNAL 1
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                                                                                                                                    InterPro; IPR004825; Ins/IGF/rela
InterPro; IPR003234; Mollusc_ins.
                                                                                                                                                                                                                                                                                                                    FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids at fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.
SUBUNIT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GORGO
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P01308;
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science 208:57-59(1980).
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TISSUE-Pancreas;
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Mammalia; Eutheria;
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MEDLINE=73161263; F
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Nature 187:483-485(1960).
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"Synthesis of pepti
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Sakura H., Iwamoto Y., Sakamoto Y., Kuzuya T., Hirata H.;
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"Identification of
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chain reaction.";
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                                  Hua Q.-X., Weiss M.A.;
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                                                                                                                                                                                                                  "Comparative 2D NMR studies of human insulin insulin: sequential resonance assignment and dynamics and receptor recognition."; Biochemistry 30:5505-5515(1991).
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Hua Q.-X., Weiss N
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                                                                                                                                                                                                                                                                                                                                                                                            use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for or send an email -
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MEDLINE=22833521; PubMed=12952878; DOI=10.1101/gr.948003;
Stead J.D.H., Hurles M.E., Jeffreys A.J.;
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MEDLINE=92219953; PubMed=15
Seino S., Bell G.I., Li W.;
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Mammalia; Eutheria;
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SIMILARITY: Belongs to the insulin family.
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96.6%;
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Last annotation updat
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Pred. No. 9.3e-39;
1; Mismatches 2
       C peptide.
Insulin A chain.
Interchain (By si
Interchain (By si
                                                                      Insulin B chain.
C peptide.
                                                                                                                      Insulin family; Signal. By similarity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         genes support the hypothesis of a slower n humans and apes than in monkeys.";
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tose phosphate
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MEDLINE=22833521; PubMed=12952878; DOI=10.1101/gr.948003;

Stead J.D.H., Hurles M.E., Jeffreys A.J.;

"Global haplotype diversity in the human insulin gene reg

Genome Res. 13:2101-2111(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISULFID
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                   EMBL, AY137503; AAN06937.1; -.
HSSP; P01308; 1AIO.
InterPro; IPR004885; Ins/IGF/relax.
Pfam; PF00049; Insulin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         05-JUL-2004 (Rel. 44, 05-JUL-2004 (Rel. 44, 05-JUL-2004 (Rel. 44,
                                                                                                                                                   PROPEP
                                                                                                                                                                                    SIGNAL
                                                                                                                                                                                                   Glucose metabolism;
                                                                                                                                                                                                                   SMART; SM00078; IIGF; 1. PROSITE; PS00262; INSULIN; 1.
                                                                                                                                                                                                                                             PRINTS; PRO0277; INSULINB.
ProDom; PD015667; Mollusc_ins; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9600;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pongo pygmaeus (Orangutan).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIMILARITY: Belongs to the insulin family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       disulfide bonds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fatty acids.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ry acids. It accelerates glycolysis, the le, and glycogen synthesis in liver.
                                                                                                                                                                                                                                                                                                                                                                     an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             precursor.
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                 87.5%;
98.8%;
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Last annotation updat
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Pred. No. 2.4e
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Pred.
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, 41EB8DF79837CEF5 CRC64;
                                                                                 βy
                                                                                               Interchain (By similarity). Interchain (By similarity).
                                                                                                                                                                                  Insulin family; Signal. By similarity.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
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22D2B32B94F520F8
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                   DB 1;
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                               Length 110;
                                                                   CRC64;
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Insulin SIGNAL CHAIN

n family; Signal. 1 24 25 54 protein sequencing;

Insulin B chain

Direct

1. Glucose

metabolism;

Hormone

Pfam, PF00049; InBulin; 1.
PRINTS; PR00277; INSULING.
ProDom; PD015667, Mollusc\_ins; 1.
SMART; SM00078; IlGF; 1.
PROSITE; PS00262; INSULIN; 1.

HSSP; P01308; 1EV6

InterPro; IPR004825; Ins/IGF/relax

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RESULT 7
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01-FEB-1996
05-JUL-2004
                                                                                                                                                                                                                                                               Giddings S.J., Carnaghi L.R., Devaskar S.U.;
Submitted (ApR-1991) to the EMBL/GenBank/DDBJ databases.
-I-FÜNCTION: Insulin decreases blood glucose concentrat
increases cell permeability to monosaccharides, amin
fatty acids. It accelerates glycolysis, the pentose
cycle, and glycogen synthesis in liver.
-I-SUBUNIT: Heterodimer of a B chain and an A chain lin
disulfide bonds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INS RABI
P01311;
                                                                       the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See lor send an email to license@isb-sib.ch).
               EMBL; U03610; AAA19033.1;
EMBL; M61153; AAA17540.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=New Zealand white; TISSUE=Pancreas;
MEDLINE=94179230; PubMed=8132571;
Devaskar S.U., Giddings S.J., Rajakumar P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE OF 56-110 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Smith L.F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 25-54 AND 90-110.
MEDLINE-66160119; PubMed=5949593; DOI=10.1016/0002-9343(66)90145-8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 25-54
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=9986;
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                                                                                                                                                                                         This SWISS-PROT entry is copyright.
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PIR; A53438; INRB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Species variation in the amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Insulin gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Insulin precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Biol.
                                                                                                                                                                                                                               SIMILARITY: Belongs to the insulin family.
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                                                                                                                                                                                                                                                   SUBCELLULAR
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                                                                                                                                                                       the Swiss Institute of Bioinformatics
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(Rel.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              40:662-666 (1966)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     expression and insulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 269:8445-8454(1994).
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                                                                                                                                                                                                                                                 LOCATION: Secreted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01, Created)
33, Last sequence up
44, Last annotation
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Chordata; Craniata; Vertebrata; Euteleostomi;
Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rajakumar P.A.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                acid sequence
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                                                                                             (See http://www.isb-sib.ch/announce/
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RESULT 8
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Matches 76
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 Glucose metabolism; H
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CHAIN 25 5
PROPEP 57 8
CHAIN 90 11
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                                                                                                                                                                                                                                                                                                                                                                                                                                    Spermophilus tridecemlineatus
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PROPEP
CHAIN
                                                                                   PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc_ins;
SMART; SM00078; I1GF; 1.
                                                                                                                                                                         entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a c
between the Swiss Institute of Bioinformatics and the EMBL
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                                                                            PROSITE;
                                                                                                                     Pfam; PF00049; Insulin;
                                                                                                                                                     EMBL; AY038604; AAK72558.1; -.
                                                                                                                                                                                                                                                                                                                                                                                TISSUE=Pancreas;
                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Name=INS;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Insulin precursor.
                                                                                                                                 nterPro; IPR004825; Ins/IGF/relax.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SPETR
                                                                                                                                                                                                                                                                                  fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver. SUBUNIT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
                                                                                                                                                                                                                                                              SIMILARITY: Belongs to the insulin family.
                                                                                                                                                                                                                                                                        SUBCELLULAR LOCATION: Secreted.
                                                                                                                                          P01308; 1EV6.
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(Rel. 42, Last sequence update)
(Rel. 44, Last annotation update)
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Insulin B chain.
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Insulin A chain.
Interchain (By si
Interchain (By si
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Pred. No. 2.4e-34;
3; Mismatches 6
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Interchain.
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  similarity).
similarity).
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                                                  InterPro; IPR004825; Ins/IGF/rel.
Pfam; PF00049; Insulin; 1.
PRINTS; PR00277; INSULINB.
PRODOM; PD015667; MOLIUSC_ins; 1
SMART; SM00078; IlGF; 1.
PROSITE; PS00262; INSULIN; 1.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mammalia: (Dog).

Canis familiaris (Dog).

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

Mammalia: Eutheria; Carnivora; Fissipedia; Canidae; Canis.
             Insulin family; Signal. SIGNAL 1 24
                                        Direct protein sequencing;
                                                                                                                                                              EMBL; V00179; CAA23475.1;
                                                                                                                                                                                                    modified and this statement entities requires a license
                                                                                                                                                                                                                              use
                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Coded amino acid sequence of canine preproinsulin predicts additional C-peptide fragment."; J. Biol. Chem. 258:2357-2363(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=83109071;
Kwok S.C.M., Chan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21-JUL-1986 (Rel.
21-JUL-1986 (Rel.
05-JUL-2004 (Rel.
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                                                                                                                                    HSSP; P01317; 1APH
                                                                                                                                               PIR; A92413; IPDG
                                                                                                                                                                                       or send an email to license@isb-sib.ch).

    -:- SIMILARITY: Belongs to the insulin family.

                                                                                                                                                                                                                                                                                                                                                                                                                                  Smith L.F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 25-54
MEDLINE=66160119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9615
                                                                                                                                                                                                                                                                                                                                                                                                      "Species variation in the amino acid Am. J. Med. 40:662-666(1966).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Insulin precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                       FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids fatty acids. It accelerates glycolysis, the pentose phosphat cycle, and glycogen synthesis in liver.
SUBUNIT: Heterodimer of a B chain and an A chain linked by t disulfide bonds.
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                                                                                                                                                                                                                non-profit institutions as long as its content and this statement is not removed. Usage by ar
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PubMed=5949593; DOI=10.1016/0002-9343(66)90145-8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=6296142;
S.J., Steiner D.F.;
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89.4%;
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P01310;
                                                                                              InterPro; IPR004825; Ins/IGF/relax. Pfam; PF00049; Insulin; 1. PRINTS; PR00277; INSULINB. SMART; SM00078; IIGF; 1.
                                                                                                                                      PIR; A01580; IPHO. HSSP; P01317; 1APH
                                                                                                                                                                                                                                                                                                                                                                                                Equus caballus (Horse).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
NCBI_TaxID=9796;
                                                                           Direct protein sequencing;
                                                                                        PROSITE; PS00262; INSULIN;
                                                                                                                                                                                                                      ÷
                                                                                                                                                                                                                                                                                        Tager H.S., Steiner D.F.; "Primary structures of the
                                                                                                                                                                                                                                                                                                            MEDLINE-73061498; PubMed-4640931;
                                                                                                                                                                                                                                                                                                                                          Arch. Biochem.
                                                                                                                                                                                                                                                                                                                                                   Harris J.I., Sanger F., Naughton M.A., "Species differences in insulin.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-JUL-1986 (Rel.
25-OCT-2004 (Rel.
                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 33-63.
                                                                                                                                                                                                                                                                                                                                                                       PubMed=13373434;
                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE OF 1-30 AND 66-86
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Insulin precursor
                                                                                                                                                                                                                                                                       Biol.
                                                                                                                                                                                                          Biol Chem. 247:7936-7940(1972).

FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids are fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.

SUBUNIT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
                                                                                                                                                               SUBCELLULAR LOCATION: Secreted.
SIMILARITY: Belongs to the insulin family.
CAUTION: X's at positions 31-32 and 64-65 represent paired basic residues assumed by homology to be present in the precursor
                                                                                                                                                            molecule.
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                                    Insulin B of peptide.
A3E1E822711BDB46 CRC64;
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Pred. No. 1.
                   Interchain
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Insulin A chain.
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                                     A chain
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INS2_MOUSE
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Best Local :
                                                                                                                                                                                                                                  Buenzii H.F., Glatthaar B., Kunz P., Muelhaupt E., Humbel R.E.;
"Amino acid sequence of the two insulins from mouse (Maus musculus Hoppe-Seyler's Z. Physiol. Chem. 353:451-458 (1972).
-i- FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids an fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.
-i- SUBUNIT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
-i- SUBCELLULAR LOCATION: Secreted.
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21-JUL-1986 (Rel. 0
13-AUG-1987 (Rel. 0
05-JUL-2004 (Rel. 4
HSSP; P01317; 1APH.

MGD; MGI:96573; Ins2.

GO; GO:0005634; C:nucleus; IDA.

GO; GO:0005732; C:small nucleolar ribonucleoprotein

GO; GO:0000187; P:activation of MAPK; IDA.
                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no we modified and this statement is not removed. Usage by and for commercial
                                                                            EMBL; X04724; CAA28433.1; PIR; A26342; INMS2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=90372989; PubMed=2397023;
MEDLINE=90372989; PubMed=2397023;
Sawa T., Ohgaku S., Morioka H., Yano S.;
"Molecular cloning and DNA sequence analysis of preproinsulin genes
the NON mouse, an animal model of human non-obese, non-insulin-
dependent diabetes mellitus,";
J. Mol. Endocrinol. 5:61-67(1990).
                                                                                                                          or send
                                                                                                                                        entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 25-54 AND 90-110.
MEDLINE=72189455; PubMed=5063718;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
MEDLINE=87169768; PubMed=3104603;
Wentworth B.M., Schaefer I.M., Villa-Komaroff L., Chirgwin J
"Characterization of the two nonallelic genes encoding mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              preproinsulin."
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Mammalia; Eutheria; Rodentia;
NCBI TaxID=10090;
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Best Local Similarity
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05_JUL-2004 (Rel. 44, Last a
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MEDLINE-86310882; PubMed=2427930;

Soares M.B., Schin E., Henderson A., K
Zeitlin S., Chirgwin J., Efstratiadis
Zeitlin S., Chirgwin J., Efstratiadis
Zeitlin S., Chirgwin J., Efstratiadis
                                                                                                                                                                                                                                                         Insulin 2 precursor.
Name=Ins2; Synonyms=Ins-2;
Rattus norvegicus (Rat),
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
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PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc ins; 1.
SMART; SM00078; IIGF; 1.
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                                                                                                                                                                                            STRAIN=Sprague-Dawley; TISSUE=Liver;
MEDLINE=80045035; PubMed=498284; DOI=10.1016/0092-8674(79)90071-0;
Lomedico P., Rosenthal N., Efstratiadis A., Gilbert W., Kolodner R
                  The structure
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                                                                                                                                                        Cell 18:545-558(1979).
                                                                                                                                                                          "The structure and
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GO:0008286; P:insulin receptor signaling pathway; IDA.
GO:0016042; P:lipid catabolism; IDA.
GO:0042981; P:regulation of apoptosis; IMP.
GO:0042325; P:regulation of phosphorylation; IDA.
GO:0006983; P:response to ER-overload; IMP.
      dico P.T., Rosenthal N.,
structure of rat preproi
N. Y. Acad. Sci. 343:425
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Biol. 5:2090-2103(1985)
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         preproinsulin genes. 343:425-432(1980).
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Interchain.
                            Kolodner R., Efstratiadis
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Sciurognathi; Muridae; Murinae; Rattus.
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EMBL; J00748, AAA41443.1; -.
EMBL; M25585; AAAA1440.1; -.
EMBL; M25583; AAAA1440.1; JO:
EMBL; B90789; IPRT2.
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MEDLINE=70067613; PubMed=4311938;
MEDLINE=70067613; PubMed=4311938;
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MEDLINE=73061498; PubMed=4640931;
Tager H.S., Steiner D.F.;
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                                                                                                                                                                                                                                                                                                                                                                         SIGNAL
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Direct protein sequencing; Glucose metabolism; Hormone;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF00049; Insulin; 1.
PRINTS; PR00277; INSULINB.
ProDom; PD015667; Mollusc ins;
SMART; SM00078; I1GF; 1.
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"Rat-proinsulin C-peptides. Amino
Eur. J. Biochem. 25:153-162(1972)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 57-87,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RGD; 2916; Ins2.
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SUBUNIT: Heterodimer of a B chain and an A chain linked being the content of t
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Pred. No. 5.1e-33;
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SMART; SM00078; I1GF; 1.
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Fed. Proc. 32:300-300(1973).

I- FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids and fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.

-- SUBUNT: Heterodimer of a B chain and an A chain linked by two disulfide bonds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bell G.I., Sanchez-Pescador R "Sequence of a cDNA encoding ?
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Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi
Mammalla; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
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05-JUL-2004 (Rel. 44,
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Pfam; PF00049; Insulin; 1.
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RESULT 14
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SEQUENCE FROM N.A.
MEDLINE=80240379; PubMed=6249167;
Lomedico P.T., Rosenthal N., Kolodner R., /
"The structure of rat preproinsulin genes."
"had. Sci. 343:425-432(1980).
                                                                                                                                                                                                                                                                        Markussen J., Sundby F.;
Markussen J., Sundby F.;
"Rat-proinsulin C-peptides. Amino-acid
"Rat-proinsulin C-peptides. Amino-acid
Eur. J. Blochem. 25:153-162(1972).
                                    This SWISS-PROT entry is copyright. It is produced through a collal between the Swiss Institute of Bioinformatics and the EMBL outsithe European Bioinformatics Institute. There are no restrictions
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rattus norvegicus (Rat).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Rattus.
                                                                                                                       MEDLINE=70067613; PubMed=.
Steiner D.F., Clark J.L.,
Aten B., Oyer P.E.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN=Sprague-Dawley; TISSUE=Liver;
MEDLINE=80045035; PubMed=498284; DOI=10.1016/0092-8674(79)90071-0;
Lomedico P., Rosenthal N., Efstratiadis A., Gilbert W., Kolodner R
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MEDLINE=72177385; 1
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                                                                                                                                                                                     fatty acids. It accelerates glycolysis, the cycle, and glycogen synthesis in liver. SUBUNIT: Heterodimer of a B chain and an A of the cycle.
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FUNCTION: Insulin decreases blood glucose concentration. It
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. Horm. Res. 25:207-282(1969).
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R EMBL; J00747; AAA41442.1; -.

R EMBL; M25584; AAA41439.1; -.

R PIR; A90788; IPRT1.

R HSSP; P01308; 1A7F.

R HSSP; P01308; 1A7F.

R InterPro; IPR004825; Ins/IGF/relax.

R InterPro; IPR004825; Ins/IGF/relax.

R Pfam; PF00099; Insulin; 1.

R PRINTS; PR00277; INSULINB.

R PRINTS; PR00277; INSULINB.

R PRODOm; PD015667; Mollusc_ins; 1.

R PROSITE; PS002562; INSULIN; 1.

Direct protein sequencing; Glucose metabolism; Hormone;

Insulin family; Multigene family; Signal.
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MEDLINE=68286485; PubMed=5657063;
Chance R.E., Ellis R.M., Bromer W.W.;
Chance R.E., servinsulin: characterization
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MEDLINE=22135958; PubMed=12140686;
MEDLINE=22135958; PubMed=12140686;
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Mammalia; Eutheria;
NCBI_TaxID=9823;
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16-OCT-2001 (Rel. 40,
25-OCT-2004 (Rel. 45,
Submitted (JUL-1970)
                    Chance R.E.
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Georges M., Andersson
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porcine preproinsulin cDNA sequence
(MAY-1998) to the EMBL/GenBank/DDBJ
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Braunschweig M., Nezer C.,
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EMBL; AF064555; AAC77920.1; ALT INIT.

EMBL; AY044828; AAL69550.1; -

PDB; 1DEI; X-ray; A/C=88-108, B/D=25-54

PDB; 11ZB; X-ray; A/C=88-108, B/D=25-54

PDB; 11ZB; X-ray; A/C=88-108, B/D=25-54

PDB; 1MPJ; X-ray; A/C=88-108, B/D=25-54

PDB; 1SDB; X-ray; A/C=88-108, B/D=25-54

PDB; 1SDB; X-ray; A/C/E/G/I/K=88-108, B/D=25-08

PDB; 1MAV; X-ray; A/C/E/G/I/K=88-108, B/D=25-54

PDB; 1ZEI; X-ray; A/C=88-108, B/D=25-54

PDB; 2TCI; X-ray; A/C=88-108, B/D=25-54

PDB; 3INS; Neutron; A/C=88-108, B/D=25-54

PDB; 3INS; Neutron; A/C=88-108, B/D=25-54
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MEDINE-89099318; PubMed=2905485;
Baker B.N., Blundell T.L., Cutfield J.F., Cutfield S.M., Dodson & Dodson G.G., Crowfoot Hodgkin D.M., Hubbard R.E., Isaacs N.W., Reynolds C.D., Sakabe K., Sakabe N., Vijayan N.M.;
"The structure of 2Zn pig insulin crystals at 1.5-A resolution.";
Philos. Trans. R. Soc. Lond., B, Biol. Sci. 319:369-456(1988).
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MEDLLINE=91222450; PubMed=2025410; DOI=10.1107/S0108768190009570;

Badger J., Harris M.R., Reynolds C.D., Evans A.C., Dodson E.J.,

Dodson G.G., North A.C.T.;

"Structure of the pig insulin dimer in the cubic crystal.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   insulin at 1.65-A resolution.";
Acta Crystallogr. D 53:507-512(1997).
-I-FUNCTION: Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids are fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver.
-I- SUBUNIT: Heterodimer of a B chain and an A chain linked by two
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Blundell T.L., Dodson G.G., Hodgkin D.,
"Insulin. The structure in the crystal
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IBAACS N.W., Agarwal R.C.;
"Experience with fast Fourier least squares in the component of the componen
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DB; IDEI; X-ray; A/C=88-108, B/D=25-47.

DB; IIZA; X-ray; A/C=88-108, B/D=25-54.

DB; IIZB; X-ray; A/C=88-108, B/D=25-54.

DB; IIDB; X-ray; A/C=88-108, B/D=25-54.

DB; INDB; X-ray; A=88-108, B-2-49.

DB; ISDB; X-ray; A/C=88-108, B-27-49.

DB; INAV; X-ray; A/C/B/G/I/K=88-108, B/D+2/H/J/L=25-54.

DB; IZNI; X-ray; A/C=88-108, B/D=25-54.

DB; ZTCI; X-ray; A/C=88-108, B/D=25-54.

DB; ZTCI; X-ray; A/C=88-108, B/D=25-54.

DB; JINS; Neutron; A/C=88-108, B/D=25-54.

DB; JINS; Neutron; A/C=88-108, B/D=25-54.
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BATABASE: NAME=Protein Spotlight; NOTE=Issue 9 of April 2001;

WWW="http://www.expasy.org/spotlight/articles/sptlt009.html".
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DR PDB; 41NS; X-ray; A/C=88-108, B/D=25-54.

DR PDB; 61NS; X-ray; A/C=88-108, B/D/F=25-54.

DR PDB; 91NS; X-ray; A/C/E=88-108, B/D/F=25-54.

DR PDB; 91NS; X-ray; A-88-108, B/D/F=25-54.

DR PDB; 91NS; X-ray; A-88-108, B-25-54.

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